

Specification (Measurement)

MRS170 Public Utilities in Road Projects Site Works

July 2025



Copyright

© The State of Queensland (Department of Transport and Main Roads) 2025.

Licence



This work is licensed by the State of Queensland (Department of Transport and Main Roads) under a Creative Commons Attribution (CC BY) 4.0 International licence.

CC BY licence summary statement

In essence, you are free to copy, communicate and adapt this work, as long as you attribute the work to the State of Queensland (Department of Transport and Main Roads). To view a copy of this licence, visit: <https://creativecommons.org/licenses/by/4.0/>

Translating and interpreting assistance



The Queensland Government is committed to providing accessible services to Queenslanders from all cultural and linguistic backgrounds. If you have difficulty understanding this publication and need a translator, please call the Translating and Interpreting Service (TIS National) on 13 14 50 and ask them to telephone the Queensland Department of Transport and Main Roads on 13 74 68.

Disclaimer

While every care has been taken in preparing this publication, the State of Queensland accepts no responsibility for decisions or actions taken as a result of any data, information, statement or advice, expressed or implied, contained within. To the best of our knowledge, the content was correct at the time of publishing.

Feedback

Please send your feedback regarding this document to: tmr.techdocs@tmr.qld.gov.au

Contents

- 1 Introduction 1**
- 2 Measurement of work 1**
 - 2.1 Standard Work Items 1
 - 2.2 Payment for Works from other Specifications 7
 - 2.3 Work Operations 7
 - 2.3.1 *Road Project Site Works – General* 7
 - 2.3.2 *Street Lighting Rate 2 (NPL2) owned and maintained by an Electricity Entity (Public Utility)* 16
 - 2.3.3 *Electricity Assets (LV/HV Electricity Network Assets)* 18
 - 2.3.4 *Telecommunications Network* 28
 - 2.3.5 *Water* 39
 - 2.3.6 *Waste water / Sewer* 48
 - 2.3.7 *Gas Utility network* 60
- 3 Temporary Support of Utility Assets 67**
- 4 Public Utility Authorities fees for representatives on Site 67**
- 5 Damage and Repair of PUP 67**

1 Introduction

This Specification applies to the management, coordination and implementation of Public Utility Plant (PUP) works undertaken by the Principal Contractor and the various Public Utility Authorities in conjunction with the works under the Contract. It does not include local government owned stormwater assets or other third party assets that are not PUP.

Please note: Essential services are not to be disconnected or placed at unnecessary risk of damage (particularly those servicing medical centres, hospitals, emergency services, defence and so on) unless otherwise negotiated and agreed by the relevant parties.

Additionally, more than one standard, department and Utility will apply, engineers must reconcile and negotiate standards to ensure overall safety.

This Specification shall be read in conjunction with MRS01 *Introduction to Specifications* and other Specifications as appropriate. Reference should be made to the associated Technical Specifications suites (MRTS, MRS and Annexures) when developing a schedule for PUP relocation.

This Specification forms part of the Transport and Main Roads Specification Manual.

2 Measurement of work

2.1 Standard Work Items

In accordance with the provisions of Clause 2.1.3 of MRS01 *Introduction to Specifications*, the Standard Work Items incorporated in this Specification are listed in Table 2.1.

Table 2.1 – Standard Work Items

Standard Item No.	Description	Unit of Measurement
Road Project Site Works - General		
22101	Management of PUP authorities [<i>description</i>] (road construction contractor only)	lump sum
22102	Project Management / Design review [<i>Utility Authority</i>] (Utility Authority only)	lump sum
22103	Location of overhead and underground utility assets as per Quality Level B, AS 5488	m
22104	Location of underground utility assets using ground penetrating radar or similar non-destructive method	m
22105	Installation of identification markers for underground and/or overhead utility assets	lump sum
22106	Protection of all existing, temporary or permanent utility assets during construction (as per individual Utility Authority requirements)	lump sum
22107	Design [<i>Utility Authority</i>] (Utility Authority Only, excluding Electrical and Telecommunication authorities)	lump sum

Standard Item No.	Description	Unit of Measurement
22108	Excavation [<i>manual</i> <i>mechanical</i> <i>manual and mechanical</i>] process to expose and locate underground utility assets as per Quality Level A, AS 5488	m ³
22109	Supply and install of permanent reinforced concrete encasement / protection slab [<i>description</i>]	m ³
22110	Supply, install and commissioning of [<i>material</i>] enveloper components for [<i>Utility Asset type</i>], Class [<i>class</i>], [<i>diameter</i>] mm diameter, [<i>environment</i>] environment in accordance with [<i>reference design</i>] (includes all vent pipes associated with enveloper and grouting)	m
22111	[<i>Raise</i> <i>Remove</i> <i>Lower</i>] existing [<i>Utility Authority Asset</i>] by [<i>height</i>] mm [<i>description</i>]	m
22112	Modification / adjustment of pits / chambers to final surface level in accordance with [<i>Reference Drawings</i>]	each
22113	Reinstate existing [<i>diameter</i>] mm [<i>material</i>] property service connection arrangement in accordance with [<i>Reference Drawings</i>]	each
22114	Removal and disposal of property service connections [<i>size</i>] mm to private property in accordance with [<i>Reference Drawings</i>]	each
22115	Preparation and supply of certified As Constructed drawings including Asset Design and As Constructed (ADAC) documentation, and certified survey (including survey pick up) for relocation and protected underground or overhead utility assets as needed to MRTS56 <i>Construction Surveying</i> .	lump sum
Street Lighting Rate 2 (NPL2) owned and maintained by an Electricity Entity (Public Utility)		
22201	Rate 2 (NPL2) street lighting design (owned and maintained by Electricity Entity)	lump sum
22202	Rate 2 (NPL2) lighting design approval, acceptance or abolishment in accordance with [<i>Electricity Entity</i>] standards and requirements	lump sum
Electricity Assets (LV/HV Electricity Network Assets)		
22251	Electrical Design [<i>voltage</i>] kV, [<i>overhead</i> <i>underground</i>]	lump sum
22252	Supply, install, test and commissioning of [<i>product type</i>] [<i>electrical conduit</i> <i>communications conduit</i>], DN [<i>diameter</i>] mm in accordance with [<i>reference design</i>] and [<i>Electricity Entity</i>] standard (trenching only)	m
22253	Supply, install, test and commissioning of [<i>product type</i>] [<i>electrical conduit</i> <i>communications conduit</i>], DN [<i>diameter</i>] mm in accordance with [<i>reference design</i>] and [<i>Electricity Entity</i>] standard (directional drilling / micro tunnelling only)	m
22254	Supply, install, test and commissioning of service pit [<i>type</i>] in accordance with [<i>reference design</i>] and [<i>Electricity Entity</i>] standard	each
22255	Supply, install (haul) [<i>voltage</i> <i>type</i>] kV [<i>type</i>] [<i>electrical cable</i> <i>communication cable</i>] in underground conduits in accordance with [<i>Electricity Entity</i>] standard	m

Standard Item No.	Description	Unit of Measurement
22256	Supply, install, test and commissioning of [height] m [type] power pole in accordance with [reference design] and [Electricity Entity] standard	each
22257	Supply, install, test and commissioning of [height] m [type] transmission tower in accordance with [reference design] and [Electricity Entity] standard	each
22258	Supply, install (haul) [voltage type] kV [type], [electrical cable communication cable] on [power pole transmission tower] in accordance with [Electricity Entity] standard	m
22259	Supply, install, test, commissioning of [voltage] kV [pad mounted pole mount] transformer in accordance with [Electricity Entity] standard	each
22260	Live Connection works [voltage] kV [overhead]	lump sum
22261	Live Connection works [voltage] kV [underground]	lump sum
22262	Removal and disposal of abandoned [electrical pits AC electrical pits] in accordance with [reference design]	each
22263	Removal and disposal of abandoned electrical conduits and electrical communications conduits [including AC excluding AC] in accordance with [reference design]	m
22264	Removal and disposal of redundant electrical and communications cable [above ground underground]	m
22265	Removal and disposal of abandoned power pole	each
22266	Removal and disposal of abandoned transmission tower	each
22267	Removal and disposal of abandoned [pole mounted pad mounted] transformer	each
Telecommunications Network		
22351	Telecommunications design	lump sum
22352	Supply, install, test and commissioning of [product type] communications conduit, DN [diameter] mm in accordance with [reference design] and to [Telecommunications Authority] standard (trenching only)	m
22353	Supply, install, test and commissioning of [product type] communications conduit, DN [diameter] mm in accordance with [reference design] and to [Telecommunications Authority] standard (directional drilling / micro tunnelling)	m
22354	Supply, install test and commissioning of service pit [type] in accordance with [reference design] and [Telecommunications Authority] standard	each
22355	Supply, install, test and commissioning of access / service chamber in accordance with [reference design] and [Telecommunications Authority] standard	each
22356	Supply, install (haul) [size type] communications cable in underground conduits in accordance with [Telecommunications Authority] standard (excluding fibre optic)	m

Standard Item No.	Description	Unit of Measurement
22357	Supply, install (haul) [size type] fibre optic communications cable in underground conduits in accordance with [Telecommunications Authority] standard	m
22358	Supply, install, test and commissioning of Mobile Tower in accordance with [reference design] and [Telecommunications Authority] standard	lump sum
22359	Joining / connection, test and commissioning of telecommunication cable to live network [size type] [fibre optic other]	lump sum
22360	[Raising Lowering] telecommunications access / service chamber in accordance with [reference design]	lump sum
22361	Removal and disposal of abandoned telecommunication [AC pits pits] in accordance with [reference design]	each
22362	Removal and disposal of abandoned telecommunication [AC conduits conduits] in accordance with [reference design]	m
22363	Removal and disposal of redundant telecommunications cable (above ground)	m
22364	Removal and disposal of redundant telecommunications cable (underground)	m
22365	Demolition, removal and disposal of telecommunication access chamber in accordance with [reference design]	lump sum
22366	Demolition, removal and disposal of telecommunication Mobile tower in accordance with [reference design]	lump sum
Water		
22451	Supply, install, test and commissioning of [product type] water main, DN [diameter] mm [pressure rating] in accordance with [reference design]. Constructed to [SEQ Code Standards Water Supply Code of Australia Utility Owner specific standard] (includes all welding and or jointing requirements) (excludes valves)	m
22452	Supply, install, test and commissioning of water [valve type size], in accordance with [reference design]. Constructed to [SEQ Code Standards Water Supply Code of Australia Utility Owner specific standard]	each
22453	Supply, install, test and commissioning of [diameter] mm access chamber in accordance with [reference design]. Constructed to [SEQ Code Standards Water Supply Code of Australia Utility Owner specific standard] (includes aspro risers and chamber cover)	each
22454	Supply, install, test and commissioning of [diameter] mm [type]. Fire Hydrant Arrangement in accordance with [reference design]. Constructed to [SEQ Code Standards Water Supply Code of Australia Utility Owner specific standard]	each
22455	Supply and install thrust block in accordance with [reference design]. Constructed to [SEQ Code Standards Water Supply Code of Australia Utility Owner specific standard] if not order as part of item 22451	m ³

Standard Item No.	Description	Unit of Measurement
22456	Live Connection works DN [<i>diameter</i>] mm [<i>type material</i>] water [<i>transmission distribution</i>] main in accordance with [<i>reference design</i>]	lump sum
22457	Structural relining DN [<i>diameter</i>] mm water main in accordance with [<i>reference design</i>]	m
22458	Modification / adjustment of existing scour / air valves in accordance with [<i>Reference Drawings</i>]	lump sum
22459	Treatment of abandoned [<i>type</i>] DN [<i>diameter</i>] mm water main left insitu [<i>including AC excluding AC</i>] in accordance with [<i>reference design</i>]	m
22460	Removal and disposal of redundant OD [<i>diameter</i>] mm [<i>type material</i>] water main [<i>including AC excluding AC</i>] in accordance with [<i>reference design</i>] undertaken as per [<i>SEQ Code Standards Water Supply Code of Australia Utility Owner specific standard</i>] including pits, valves and hydrants	m
22461	Removal and disposal of abandoned thrust blocks	m ³
22462	Removal and disposal of abandoned pits, valves, hydrants	each
Waste water / Sewer		
22551	Supply, install, test and commissioning of [<i>product type</i>] rising sewer, DN [<i>diameter</i>] mm [<i>pressure rating</i>] in accordance with [<i>reference design</i>]. Constructed to [<i>SEQ Code Standards Water Supply Code of Australia Utility Owner specific standard</i>] (includes all welding and or jointing requirements) (excludes valves, vents, chambers)	m
22552	Supply, install, test and commissioning of rising sewer [<i>valve type size</i>], in accordance with [<i>reference design</i>]. Constructed to [<i>SEQ Code Standards Water Supply Code of Australia Utility Owner specific standard</i>]	each
22553	Supply, install, test and commissioning of rising sewer chamber in accordance with [<i>reference design</i>]. Constructed to [<i>SEQ Code Standards Water Supply Code of Australia Utility Owner specific standard</i>]	lump sum
22554	Supply, install, test, and commissioning of rising sewer vent in accordance with [<i>reference design</i>]	each
22555	Supply, install, test and commissioning of [<i>product type</i>] gravity sewer, DN [<i>diameter</i>] mm in accordance with [<i>reference design</i>]. Constructed to [<i>SEQ Code Standards Water Supply Code of Australia Utility Owner specific standard</i>] (includes all welding and or jointing requirements) (excludes access chambers)	m
22556	Supply and install thrust block in accordance with [<i>reference design</i>]. Constructed to [<i>SEQ Code Standards Water Supply Code of Australia Utility Owner specific standard</i>] if not ordered as part of item 22551	m ³
22557	Structural relining DN [<i>diameter</i>] mm sewer in accordance with [<i>reference design</i>]	m
22558	Treatment of abandoned [<i>type</i>] DN [<i>diameter</i>] mm [<i>waste water sewer</i>] main left insitu [<i>including AC excluding AC</i>] in accordance with [<i>reference design</i>]	m

Standard Item No.	Description	Unit of Measurement
22559	Treatment of abandoned sewer access chambers left insitu in accordance with [reference design]	m ³
22560	Removal and disposal of redundant OD [diameter] mm [type material] sewer mains [including AC Sewer Main] in accordance with [reference design] undertaken as per [SEQ Code Standards Water Supply Code of Australia Utility Owner specific standard] including pits and valves (excluding access chambers)	m
22561	Removal and disposal of abandoned thrust blocks	m ³
22562	Demolition, removal and disposal of existing rising sewer vent / odour chamber in accordance with [reference design]	each
22563	Demolition, removal and disposal of existing [sewer access chambers rising sewer chamber] in accordance with [reference design]	m ³
22564	Live Connection works DN [diameter] mm [type material] sewer [reticulation trunk] main in accordance with [reference design] if not part of items 22551 or 22552	lump sum
22565	Modification / adjustment of existing scour / air valves in accordance with [Reference Drawings]	lump sum
Gas Utility network		
22651	Supply [product type] gas pipeline, [transmission distribution] DN [diameter] mm [pressure rating] in accordance with [reference design] addressing [AS 2943 AS 4645 Utility Owner specific standard] requirements	m
22652	Supply, gas [valve type size] for gas pipeline, [transmission distribution] in accordance with [reference design] addressing [AS 2885 AS 2943 AS 4645 AS 4853 Utility Owner specific standard] requirements	each
22653	Supply, install, test and commissioning of other gas fittings / access chamber / or asset [type size] for gas pipeline, [transmission distribution] in accordance with [reference design] addressing [AS 2885 AS 2943 AS 4645 AS 4853 Utility Owner specific standard] requirements	each
22654	Install, test and commissioning of [product type] gas pipeline, [transmission distribution] DN [diameter] mm [pressure rating] in accordance with [reference design]. Constructed to [AS 2885 AS 4645 Utility Owner specific standard] (includes all welding / jointing, marker boards, protection tape and posts) (excludes valves)	m
22655	Install, test and commissioning of gas [valve type size] for gas pipeline, [transmission distribution] in accordance with [reference design] addressing [AS 2885 AS 4645 Utility Owner specific standard] requirements	each
22656	Live Connection [high medium low] pressure [product type] DN [diameter] mm gas pipeline [transmission distribution] (including all valves, fittings and welding)	lump sum
22657	Treatment of abandoned [type] DN [diameter] mm for gas pipeline left insitu in accordance with [reference design]	m

Standard Item No.	Description	Unit of Measurement
22658	Treatment of abandoned other gas fitting / access chamber / or asset [<i>type</i> <i>size</i>] for gas pipeline left insitu in accordance with [<i>reference design</i>]	m
22659	Removal and disposal of redundant DN [<i>diameter</i>] mm [<i>type</i> <i>material</i>] gas pipeline [<i>transmission</i> <i>distribution</i>] in accordance with [<i>reference design</i>] including valves (excluding access chambers)	m
22660	Removal and disposal of other gas fitting / access chamber / or asset [<i>type</i> <i>size</i>] for gas pipeline [<i>transmission</i> <i>distribution</i>] in accordance with [<i>reference design</i>]	each

2.2 Payment for Works from other Specifications

Payment Items shall include all applicable work operations as described in this Specification or other relevant Specification (Measurement) schedules. These shall be paid on a progress of work basis, based on amount of work activity completed at date of claim.

Below is an example of works covered in other Specifications:

- Payment for traffic management will be in accordance with MRS02 *Provision for Traffic*
- Payment for modifications to existing drainage will be measured separately for each work item and in accordance with MRS03 *Drainage, Returning Structures and Protective Treatments*
- Payment for earthworks will in accordance with MRS04 *General Earthworks*
- Payment for unbound pavement will be in accordance with MRS05 *Unbound Pavements*
- Payment for asphalt shall be in accordance with MRS30 *Asphalt Pavements*
- Payment for environmental management will be in accordance with MRS51 *Environmental Management*
- Payment for conduits and pits will be in accordance with MRS91 *Conduits and Pits*
- Payment for horizontal directional drilling shall be in accordance with MRS140 *Horizontal Directional Drilling (HDD)*
- Payment for micro-tunnelling and pipe jacking shall be in accordance with MRS141 *Microtunnelling and Pipe Jacking*
- Payment for thrust bore and auger boring shall be in accordance with MRS142 *Thrust Boring and Auger Boring*.

2.3 Work Operations

Work Operations included in the Standard Work Items are specified in the relevant clause adjacent to each Standard Work Item listed in Table 2.1.

2.3.1 Road Project Site Works – General

Often more than one standard, department and Utility will apply, engineers must reconcile and negotiate standards to ensure overall safety.

Item 22101 Management of PUP authorities [*description*] (road construction contractor only)

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) appointment of a Utility coordination representative
- c) preparation, submission, monitoring and updating of Utility Relocation Management Plan
- d) obtaining information regarding existing Utilities from the relevant Utility Owner / authority
- e) management of relocations and/or modifications to Utilities including all costs associated with the provisioning of the Utility Authorities and/or their appointed specialist contractors unrestricted access to the site to perform their works and inspections; in accordance with the relocation design drawings appended to this Specification
- f) liaison and negotiation with Utility Authorities and/or their Contractors
- g) provision of traffic control for the relocation works to be undertaken by the Principal Contractor within the site (Refer to MRS02 *Provision for Traffic*). Note: Any additional traffic control for Utility Authorities or their appointed specialist contractor as directed by the Administrator shall be provided by the Contractor and shall be paid as Day Works
- h) supply of all necessary information and survey set out associated with the relocation works, to the Utility Authority (as required) to enable the Public Utility Authority to complete its work
- i) coordinate works by the respective Utility Authorities
- j) verification and checking of proposed works against all available information relating to existing overhead or underground utility assets in close proximity to pavement / civil works
- k) provision of engineering survey in accordance with *TMR Surveying Standards* showing the alignment and depth of all utility assets that the Contractor believes are in conflict with the works. The survey file shall be in 12d format and shall be supplied to the Administrator on the same day that any previously unidentified conflict is identified
- l) facilitation of a joint inspection with the Administrator to determine scope of all likely impacts / relocations works
- m) all costs associated with the support of existing power poles by Energex / Ergon / Powerlink, as required, and
- n) all other activities not covered by a separate pay item identified elsewhere within this Specification.

Item 22102 Project Management / Design review [*Utility Authority*] (Utility Authority only)

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) appointment of a Utility Authority representative
- c) facilitation of a joint inspection with the Administrator / nominated Transport and Main Roads representative to determine scope of all likely impacts / relocations works

- d) reviewing, and endorsing Utility asset protection/ relocation designs associated with their assets
- e) verification and checking of proposed works against all available information relating to existing overhead or underground utility assets in close proximity to pavement / civil works
- f) providing information regarding existing utility assets
- g) management of relocations and/or modifications to utility assets including all costs associated with the provisioning of the Utility Authorities and/or their appointed specialist contractors in accordance with the endorsed relocation / protection design drawings
- h) liaison and negotiation with Transport and Main Roads Contractors, other Utility Authorities and/or their nominated contractors
- i) written agreement from each utility of the future location of the utility's assets and the scope of works required in conjunction with any specific district or region authorisation requirements
- j) provision of traffic control for the relocation works to be undertaken (Refer to MRS02 *Provision for Traffic*) as required (if Utility Authority is undertaking the works as the nominated Principal Contractor then they are responsible for provision of traffic control)
- k) supply of all necessary information and survey set out associated with the relocation works, as required
- l) coordinate works undertaken by the respective Utility Authority contractor
- m) all costs associated with the support of all existing utility assets, as required
- n) survey pick up and provision of as constructed drawings in accordance with MRTS56 *Construction Surveying* showing the alignment and depth of all relocated / protected utility assets. The survey file shall be in 12d format and shall be supplied to the Administrator within two weeks after completing relocation / protection works
- o) legal services and other contract management costs as required
- p) issuing of completion stage certificate, confirming Utility Authority acceptance of unencumbered relocated / protected utility asset, and
- q) all other activities not covered by a separate pay item identified elsewhere within this Specification.

Item 22103 Location of overhead and underground utility assets as per Quality Level B, AS 5488

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply / coordinate plant and works required to undertake the physical locating of all existing services located within the [*reference design*] using methods accepted as Level B quality in AS 5488. These locating works are to be undertaken by a suitably qualified Contractor to confirm the asset type, location, size and depth / height in accordance with *TMR Surveying Standards* and Quality Level B, AS 5488

- c) preparation, monitoring and updating of utility conflict matrix and drawings based on Quality Level B AS 5488 information. Data obtained using Quality Level B methods must be identified with the acronym QL-B, and
- d) survey file shall be in 12d format and shall be supplied to the Transport and Main Roads representative every two weeks until the identification works have been completed.

Item 22104 Location of underground utility assets using ground penetrating radar or similar non-destructive method

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply / coordinate plant and works required to undertake the physical locating of all existing services located within the [reference design] using ground penetrating radar. These locating works are to be undertaken by a suitably qualified Contractor to confirm the asset type, location, size and depth/height in accordance with *TMR Surveying Standards*
- c) preparation, monitoring and updating of utility conflict matrix and drawings based on ground penetrating radar information. Data obtained using ground penetrating radar must be identified with the acronym GPR, and
- d) survey file shall be in 12d format and shall be supplied to the Transport and Main Roads representative every two weeks until the identification works have been completed.

Item 22105 Installation of identification markers for underground and/or overhead utility assets

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*, and
- b) supply, coordinate / install and maintain markers, tiger tails, flagging and so on required to identify existing and/or relocated underground and/or overhead utility assets located within the project site, that may be impacted directly or inadvertently by the project works.

Item 22106 Protection of all existing, temporary or permanent utility assets during construction (as per individual Utility Authority requirements)

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials, including all reinforcement and road pavement materials as required
- c) undertaking all necessary excavations and/or protection works required to protect all temporary and permanent utility assets during construction, and
- d) removal of all unused materials from site including transportation as a result of undertaking utility protection.

Item 22107 Design [Utility Authority] (Utility Authority Only, excluding Electrical and Telecommunication authorities)

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) participate in a joint inspection with the nominated Transport and Main Roads representative, Utility Authority representatives and Transport and Main Roads contractor, to determine scope of all likely impacts associated with the protection / relocations works
- c) review of all utility asset location data and identify any additional data required for design development
- d) preparation, of protection and/or relocation designs for impacted utility assets / networks in accordance with the project brief and specified standards
- e) liaison and negotiation with Transport and Main Roads contractors, other Utility Authorities and/or their nominated contractors
- f) coordinate, negotiate and obtain alignment approval for relocated utility assets with the relevant road authority
- g) identify project constraints with regards to available utility corridors and propose/ develop cost effective solutions, and
- h) preparation, review and endorsement of works schedule, identifying work items as per Transport and Main Roads Specifications and relevant Supplementary Specifications.

Item 22108 Excavation [manual | mechanical | manual and mechanical] process to expose and locate underground utility assets as per Quality Level A, AS 5488

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply / coordinate plant and works required to undertake the physical locating and exposing all existing utility assets within 3.0 m of proposed excavations using vacuum / hydro excavation (potholing) by a suitably qualified Contractor to confirm the asset type, location, material, size and depth in accordance with *TMR Surveying Standards* to Quality Level A, AS 5488
- c) supply / coordinate plant and works required to undertake the physical locating and exposing of high-risk utility assets identified in the [reference design] using vacuum/hydro excavation (potholing) by a suitably qualified Contractor to confirm the asset type, location, material, size and depth in accordance with *TMR Surveying Standards* to Quality Level A, AS 5488
- d) dispose of the excavated material offsite and backfill the excavation with a material approved by the relevant Utility Authority and the Administrator.
- e) preparation, monitoring and updating of utility conflict matrix and drawings based on Quality Level A, AS 5488 information. Data obtained using Quality Level A methods must be identified with the acronym QL-A, and
- f) survey file shall be in 12d format and shall be supplied to the Transport and Main Roads representative every two weeks until the identification works have been completed.

Item 22109 Supply and install of permanent reinforced concrete encasement / protection slab [description]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials, including all reinforcement (concrete, bar chairs, ties etc.) road pavement and driveway materials as required
- c) carrying out localised excavations, including all necessary road / driveway pavement materials and bound material
- d) temporary support of all conduits, cables, pipes where/as required
- e) placement of sand / stabilised sand / flowable fill as required and as specified in design drawings
- f) undertake construction activities associated with concrete encasement / placement of protection slab, to finish surface level, including construction of falsework / formwork, compacting of concrete, finishing of concrete, placement of marker tape as required and further details as specified in [reference design]
- g) utilising or disposing of excavated material
- h) prefabricating materials where required
- i) cartage of components from the storage site
- j) reinstating all areas affected by the works including verge, drainage and any pavement materials where required, and
- k) removal and disposal of all demolished/unused materials from site including transportation.

Item 22110 Supply, install and commissioning of [material] enveloper components for [Utility Asset type], Class [class], [diameter] mm diameter, [environment] environment in accordance with [reference design] (includes all vent pipes associated with enveloper and grouting)

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) carrying out localised excavations, including all necessary road / driveway pavement materials and bound material
- d) mobilise / supply / coordinate plant and works required to undertake drilling operations, if required
- e) utilising or disposing of excavated material
- f) placing and compacting foundation bedding material and haunch zone material
- g) cartage of components from the storage site

- h) installing pipe envelopers as specified on design drawings. This shall include supply, installation and commissioning of plastic spacers, grout annulus between encasing pipe and water pipes and waterproofing foam sealants etc
- i) placing detectable marker tape above pipe (entire length) as per relevant Utility Authority code, if required
- j) supply, place and compact backfill material (including side zone and overlay zones), and
- k) reinstatement of turf / garden / and so on where/as required.

**Item 22111 [Raise | Remove | Lower] existing [Utility Authority Asset] by [height] mm
[description]**

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) undertaking all work in accordance with relative utility authority requirements
- c) supply of all materials, including all reinforcement and road pavement materials to carry out any raising / lowering / removing activities
- d) carrying out localised excavations as required
- e) utilising or disposing of excavated material
- f) temporary support of conduits, cables, pipes where/as required
- g) removal of utility authority asset from site where/as required
- h) placing and compacting foundation / bedding material and haunch zones where/as required
- i) placing formwork / falsework where/as required
- j) prefabricating materials where required
- k) placing of reinforcement where/as required
- l) placing and compacting concrete where/as required
- m) cartage of fitting components from the storage site where/as required
- n) laying and jointing including butt welding, collar welding as per the design drawings where/as required
- o) placing and assembling fitting components where/as required
- p) constructing thrust blocks where/as required
- q) finishing and curing concrete where/as required
- r) replacing pit / manhole lids with new load rated concrete lids (colour and finish to match adjoining new pavement) where/as required
- s) cutting pipe components where necessary where/as required
- t) supply, placing and compacting backfill material (including side zone and overlay zones) where/as required

- u) installing surface boxes, pit lids and surface fittings where/as required, and
- v) testing by an approved NATA approved authority as per the relevant Utility Authority Code including soil compaction, bacteriological testing, pressure testing and any other testing as required where/as required.

Item 22112 Modification / adjustments of pits / chambers to final surface level in accordance with [Reference Drawings]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) undertaking all work in accordance with relative utility authority requirements
- c) supply of all materials, including all reinforcement and road pavement materials to carry out any raising / lowering / removing activities
- d) carrying out localised excavations as required
- e) utilising or disposing of excavated material
- f) temporary support of conduits, cables, pipes where/as required
- g) removal of utility authority asset from site where/as required
- h) placing and compacting foundation / bedding material where/as required
- i) placing formwork / falsework where/as required
- j) prefabricating materials where required
- k) placing of reinforcement where/as required
- l) placing and compacting concrete where/as required
- m) cartage of fitting components from the storage site where/as required
- n) laying and jointing including butt welding, collar welding as per the design drawings where/as required
- o) placing and assembling fitting components where/as required
- p) finishing and curing concrete where/as required
- q) supply, placing and compacting backfill material where/as required
- r) installing surface boxes, pit lids and surface fittings where/as required, and
- s) testing by an approved NATA approved authority as per the relevant Utility Authority Code including soil compaction, and any other testing where/as required.

Item 22113 Reinstate existing [diameter] mm [material] property service connection arrangement in accordance with [Reference Drawings]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply and install all pipes, valves, and associated fittings as required by the relevant Utility Authority, including road crossing where required

- c) relocation of existing / installation of new service meter, where required, in accordance with relevant Utility Authority code / specifications
- d) carrying out localised excavations, including all necessary road pavement materials and bound material
- e) prefabricating fitting components where required
- f) cartage of fitting components from the storage site
- g) laying and jointing including butt welding, collar welding as per the design drawings
- h) placing and assembling fitting components
- i) cutting pipe components where necessary
- j) supply, placing and compacting backfill material (including side zone and overlay zones)
- k) installing surface boxes and surface fittings where specified
- l) reinstatement of turf / garden / and so on where/as required, and
- m) testing by an approved NATA approved authority as per the relevant Utility Authority Code / specification including soil compaction, bacteriological testing, pressure testing and any other testing as required.

Item 22114 Removal and disposal of property service connections [size] mm to private property in accordance with [Reference Drawings]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) verify in writing with the relevant Utility Authority and with the Transport and Main Roads Representative that the property service is no longer required and can be removed
- c) undertaking all work in accordance with relative Utility Authority requirements
- d) carrying out localised excavations, as required
- e) utilising or disposing of excavated material
- f) temporary support of conduits, cables, pipes where/as required
- g) removal of Utility Authority assets from site where/as required
- h) cartage of fitting components from the storage site where/as required
- i) cutting pipe components where necessary where/as required
- j) removal of redundant pipe, pits, valves stopcocks, and so on associated with redundant house connection
- k) supply, placing and compacting backfill material
- l) reinstatement of turf / garden and so on where/as required, and
- m) installing surface boxes, pit lids and surface fittings where/as required.

Item 22115 Preparation and supply of certified As Constructed drawings including Asset Design and As Constructed (ADAC) documentation, and certified survey (including survey pick up) for relocation; and protected underground or overhead utility assets as needed to MRTS56 Construction Surveying.

Note: Building Information Management (BIM) requirements may need to be addressed depending on the project type and size.

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) preparation of RPEQ Certified As Constructed drawings as per the current Utility Authority standard / code requirements
- c) survey pick up of all relocated and/or protected utility assets in accordance with the *TMR Surveying Standards* and Quality Level A, AS 5488. Survey file shall be provided to Transport and Main Roads in 12d format
- d) ground penetrating radar pick up of all abandoned utility assets, identifying x, y and z data. Data obtained using ground penetrating radar must be identified with the acronym GPR
- e) As Constructed drawings shall be provided to Transport and Main Roads within one month of the relocation / protection works being completed
- f) preparation of RPEQ Certified ADAC documentation as per the relevant Utility Authority standard / code requirements (if ordered), and
- g) Building Information Management (BIM) requirements where requested in the project documents.

2.3.2 Street Lighting Rate 2 (NPL2) owned and maintained by an Electricity Entity (Public Utility)

Often more than one standard, department and Utility will apply, engineers must reconcile and negotiate standards to ensure overall safety.

Item 22201 Rate 2 (NPL2) street lighting design (owned and maintained by Electricity Entity)

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) participate in a joint inspection with the nominated Transport and Main Roads representative, Utility Authority representatives and Transport and Main Roads contractor, to determine scope of all likely impacts associated with the protection / relocations works
- c) review of all utility asset location data and identify any additional data required for design development

- d) survey pick up of all relocated and/or protected utility assets in accordance with the *TMR Surveying Standards* and Quality Level A, AS 5488. Survey file shall be provided to Transport and Main Roads in 12d format
- e) preparation, of protection and/or relocation designs for impacted utility assets / networks in accordance with the project brief and specified standards
- f) liaison and negotiation with Transport and Main Roads Contractors, other Utility Authorities and/or their nominated contractors
- g) coordinate, negotiate and obtain alignment approval for relocated utility assets with the relevant road authority
- h) identify project constraints with regards to available utility corridors and propose / develop cost effective solutions
- i) preparation of RPEQ Certified As Constructed drawings as per the current Utility Authority standard / code requirements
- j) ground penetrating radar (GPR) pick up of all abandoned utility assets to MRTS56 *Construction Surveying* requirements and AS 5488 Quality Level B. Data obtained using ground penetrating radar must be identified with the acronym GPR
- k) As Constructed drawings shall be provided to Transport and Main Roads within one month of the relocation/ protection works being completed, and
- l) preparation of RPEQ Certified ADAC documentation as per the relevant Utility Authority standard/ code requirements (if ordered).

Item 22202 Rate 2 (NPL2) lighting design approval, acceptance or abolishment in accordance with [*Electricity Entity*] standards and requirements

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) lighting design agreement obtained from the electricity entity
- c) new connection or abolishment of existing electrical connections, including:
 - i. submission of an electrical new connection request/connection abolishment request through the electricity entities online portal
 - ii. once accepted, submit the electrical works request through the electricity entity online portal
 - iii. the region/district to direct whoever submits these requests to provide a copy to Procurement_Requests@tmr.qld.gov.au, and
 - iv. Please note: there will then be liaison and follow up between the Transport and Main Roads Utility Management Advisor in the Chief Procurement Office and retailer to ensure that the correct Transport and Main Roads processes are followed.

2.3.3 Electricity Assets (LV/HV Electricity Network Assets)

In addition to the design drawings, all civil works associated with electrical relocation works (including material properties) shall be in accordance with the relevant Utility Authority specifications, standards and typical details. The contractor shall ensure all work method statements and inspection hold point documentation is built around the relevant Utility Authority's specifications to ensure that the design intent is met.

Contractor to confirm location of all electrical asset (underground and overhead) prior to undertaking earthworks/auxiliary activities within the works area. Where assets are found to conflict with proposed design, contractor must notify the Administrator immediately advising on location and nature of the conflict.

Often more than one standard, department and Utility will apply, engineers must reconcile and negotiate standards to ensure overall safety.

Contractors to ensure that clearances to electrical infrastructure is maintained during construction in accordance with the relevant Utility Authority requirements to ensure that the proposed works do not impact on existing infrastructure.

Item 22251 Electrical Design [voltage] kV, [overhead | underground]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*, and
- b) all design work associated with relocation / protection of electricity network assets.

Item 22252 Supply, install, test and commissioning of [product type] [electrical conduit | communications conduit], DN [diameter] mm in accordance with [reference design] and [Electricity Entity] standard (trenching only)

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply all materials
- c) carrying out localised excavations, including all necessary road pavement materials and bound material
- d) supply, assemble, install and remove all shoring equipment required for excavations exceeding 1.5 m
- e) utilising or disposing of excavated material
- f) placing and compacting foundation bedding material and haunch zone material
- g) prefabricating materials where required
- h) cartage of all components from the storage site
- i) placing detectable marker tape, hazard board, etc above conduit, as per relevant code

- j) laying and jointing or placing and assembling all conduit components including service pits, hauling ropes, etc
- k) temporary support of other utility authority conduits, cables, pipes where required
- l) cutting conduit components as required
- m) supply, place, finish and cure concrete, as required
- n) performing plastic welding / jointing as required for the works
- o) supply and placing Geotextile or equivalent where required as specified on design drawings
- p) supply, placing and compacting backfill material (side zone and overlay zones)
- q) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code/ Standard, (including soil compaction, concrete testing, and any other testing process as specified), and
- r) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22253 Supply, install, test and commissioning of [*product type*] [*electrical conduit | communications conduit*], DN [*diameter*] mm in accordance with [*reference design*] and [*Electricity Entity*] standard (directional drilling / micro tunnelling only)

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply all materials
- c) carrying out localised excavations, including all necessary road pavement materials and bound material
- d) supply, assemble, install and remove all shoring equipment required for excavations exceeding 1.5 m
- e) mobilise drilling / micro tunnelling rig
- f) undertaking all drilling / micro tunnelling works (and associated works) required for the works
- g) stringing and installation of conduits, assembling all conduit components including service pits, hauling ropes, etc
- h) grouting
- i) cutting conduit components as required
- j) performing plastic welding / jointing as required for the works
- k) utilising or disposing of excavated material
- l) prefabricating materials where required
- m) cartage of all components from the storage site
- n) placing detectable marker tape, hazard board, etc above conduit exit / entrance, as per relevant code
- o) temporary support of other utility authority conduits, cables, pipes where required

- p) supply, place, finish and cure concrete, as required
- q) supply and placing Geotextile or equivalent where required as specified on design drawings
- r) supply, place and compact backfill [*material*]
- s) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard, (including soil compaction, concrete testing, and any other testing process as specified), and
- t) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22254 Supply, install, test and commissioning of service pit [*type*] in accordance with [*reference design*] and [*Electricity Entity*] standard

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) carrying out localised excavations, including all necessary road pavement materials and bound material
- c) supply, assemble, install and remove all shoring equipment required for excavations exceeding 1.5 m
- d) utilising or disposing of excavated material
- e) placing and compacting foundation bedding material
- f) prefabricating materials where required
- g) cartage of all components from the storage site
- h) placing detectable marker tape, hazard board, signage, pavement markers, etc as per relevant code
- i) laying and jointing or placing and assembling all service pit components
- j) temporary support of other utility authority conduits, cables, pipes where required
- k) cutting conduit components as required
- l) supply, place, finish and cure concrete, as required
- m) performing plastic welding / jointing as required for the works
- n) supply and placing Geotextile or equivalent where required as specified on design drawings
- o) supply, placing and compacting backfill material (side zone and overlay zones)
- p) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard, (including soil compaction, concrete testing, and any other testing process as specified), and
- q) Reinstatement landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22255 Supply, install (haul) [voltage | type] kV [type] [electrical cable | communication cable] in underground conduits in accordance with [Electricity Entity] standard

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply all materials
- c) cartage of all components from the storage site
- d) surface preparation works to facilitate hauling of cable
- e) all works and plant required for hauling activity
- f) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard, (including soil compaction, concrete testing, and any other testing process as specified), and
- g) reinstate landscaping, turf, footpaths, pavements as specified in [reference design].

Item 22256 Supply, install, test and commissioning of [height] m [type] power pole in accordance with [reference design] and [Electricity Entity] standard

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply all materials
- c) cartage of all components from the storage site
- d) surface preparation works to facilitate power pole installation
- e) all works and plant required for power pole installation activity, (including fixing and installation of stays, mast arms, insulators, and so on)
- f) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard, (including soil compaction, concrete testing, and any other testing process as specified), and
- g) reinstate landscaping, turf, footpaths, pavements as specified in [reference design].

Item 22257 Supply, install, test and commissioning of [height] m [type] transmission tower in accordance with [reference design] and [Electricity Entity] standard

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply all materials
- c) cartage of all components from the storage site
- d) surface preparation works to facilitate transmission tower installation
- e) all works and plant required for transmission tower footing installation
- f) place, finish and cure concrete, as required
- g) all works and plant required for transmission tower installation activity, (including fixing and installation of stays, insulators, and so on)

- h) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard, (including soil compaction, concrete testing, and any other testing process as specified), and
- i) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22258 Supply, install (haul) [voltage | type] kV [type], [electrical cable | communication cable] on [power pole | transmission tower] in accordance with [Electricity Entity] standard

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply all materials
- c) cartage of all components from the storage site
- d) surface preparation works to facilitate hauling and installation of cable
- e) all works and plant required for hauling and installation activity
- f) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard, (including soil compaction, concrete testing, and any other testing process as specified), and
- g) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22259 Supply, install, test, commissioning of [voltage] kV [pad mounted | pole mount] transformer in accordance with [Electricity Entity] standard

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply all materials
- c) cartage of all components from the storage site
- d) all surface preparation works to facilitate installation of pad mount transformer
- e) all works and plant required for installation and commissioning of pad mount transformer
- f) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard, (including soil compaction, concrete testing, and any other testing process as specified), and
- g) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22260 Live Connection works [voltage] kV [overhead]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) temporary support / protect other utility authority conduits, cables, pipes where/as required
- d) all Intervention planning and community notification requirements to maintain electricity supply / service to Electrical Authority customers

- e) energising and de-energising electrical components
- f) cutting cable components where necessary
- g) all jointing as specified in [*reference design*]
- h) temporary surface treatment where required, to facilitate live connection works
- i) prefabricating fitting components where required
- j) cartage of fitting components from the storage site
- k) placing and assembling components
- l) all commissioning processes as required, and
- m) all work shall be carried out in accordance with the provisions of the contract documents and to the satisfaction of the relevant Electrical Authority's representative and the Transport and Main Roads Representative/ Administrator.

Item 22261 Live Connection works [*voltage*] kV [*underground*]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) carrying out localised excavations, including all necessary road pavement materials and bound material
- d) supply, assemble, install and remove all shoring equipment required for excavations exceeding 1.5 m
- e) temporary support of other utility authority conduits, cables, pipes where/as required
- f) all Intervention planning and community notification requirements to maintain electricity supply / service to Electrical Authority customers
- g) energising and de-energising electrical components
- h) cutting conduit / cable components where necessary
- i) all jointing as specified in [*reference design*]
- j) temporary surface treatment where required, to facilitate live connection works
- k) prefabricating fitting components where required
- l) cartage of fitting components from the storage site
- m) placing and assembling components
- n) placing, finishing and curing concrete (including reinforcement)
- o) all commissioning processes as required
- p) testing by an approved NATA approved authority as per the relevant Utility Authority Code including soil compaction and any other testing as required
- q) utilise or dispose of excavated material

- r) supply, place and compact with *[material]* backfill to depth of *[mm]* as specified in *[reference design]*
- s) supply, place and compact with *[material]* backfill to natural surface as specified in *[reference design]*
- t) all work shall be carried out in accordance with the provisions of the contract documents and to the satisfaction of the relevant Electrical Authority's representative and the Transport and Main Roads Representative / Administrator, and
- u) reinstate landscaping, turf, footpaths, pavements as specified in *[reference design]*.

Item 22262 Removal and disposal of abandoned *[electrical pits | AC electrical pits]* in accordance with *[reference design]*

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) verify with relevant Electrical Authority and the Transport and Main Roads Representative / Administrator that the electrical conduit is dead and abandoned
- d) verify with the relevant Electrical Authority and the Transport and Main Roads Representative / Administrator the length of electrical conduit to be removed
- e) carrying out all necessary excavations
- f) temporary support of other utility authority conduits, cables, pipes where/as required
- g) demolish, remove and dispose identified electrical surface / location markers, conduits, envelopers, etc as relevant. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- h) cutting conduit components as required
- i) concrete end plugs (N20/20 – unreinforced concrete) to all abandoned electrical conduits left in place, if ordered. Concrete ends to be 500 mm minimum thickness and completely seal ends of mains
- j) all works and disposal of contaminated material associate with cutting, dewater and decontaminating of abandoned / decommissioned electrical conduits
- k) utilise or dispose of excavated material not contaminated by AC material
- l) disposal of AC material in accordance with the current legislation
- m) dispose of all potentially contaminated AC excavated material in accordance with the current legislation
- n) supply, place and compact with *[material]* backfill to depth of *[mm]* as specified in *[reference design]*
- o) supply, place and compact with *[material]* backfill to natural surface as specified in *[reference design]*

- p) all work shall be carried out in accordance with the provisions of the contract documents and to the satisfaction of the relevant Utility Authority's representative and the Transport and Main Roads Representative / Administrator, and
- q) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22263 Removal and disposal of abandoned electrical conduits and electrical communications conduits [*including AC | excluding AC*] in accordance with [*reference design*]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) verify with relevant Electrical Authority and the Transport and Main Roads Representative / Administrator that the electrical conduit is dead and abandoned
- d) verify with the relevant Electrical Authority and the Transport and Main Roads Representative / Administrator the length of electrical conduit to be removed
- e) carrying out all necessary excavations
- f) temporary support of other utility authority conduits, cables, pipes where/as required
- g) demolish, remove and dispose identified electrical surface / location markers, conduits, envelopers, etc as relevant. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- h) cutting conduit components as required
- i) concrete end plugs (N20/20 – unreinforced concrete) to all abandoned electrical conduits left in place, if ordered. Concrete ends to be 500 mm minimum thickness and completely seal ends of mains
- j) all works and disposal of contaminated material associate with cutting, dewater and decontaminating of abandoned / decommissioned electrical conduits
- k) utilise or dispose of excavated material
- l) disposal of AC material in accordance with the current legislation
- m) dispose of all potentially contaminated AC excavated material in accordance with the current legislation
- n) supply, place and compact with [*material*] backfill to depth of [*mm*] as specified in [*reference design*]
- o) supply, place and compact with [*material*] backfill to natural surface as specified in [*reference design*]
- p) all work shall be carried out in accordance with the provisions of the contract documents and to the satisfaction of the relevant Utility Authority's representative and the Transport and Main Roads Representative / Administrator, and
- q) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

**Item 22264 Removal and disposal of redundant electrical and communications cable
[above ground | underground]**

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all plant and materials required for the works
- c) verify with relevant Electrical Authority and the Transport and Main Roads Representative / Administrator that the electrical cable is dead and abandoned
- d) verify with the relevant Electrical Authority and the Transport and Main Roads Representative / Administrator the length of electrical cable to be removed
- e) all surface preparation works to facilitate removal or redundant electrical and communications cable
- f) localised excavation to facilitate removal of redundant cable
- g) dispose or utilise excavated material
- h) all works required for removal of redundant electrical and communications cable, including de-energising
- i) undertaking all testing and de-commissioning requirements as per the relevant Electrical Authority Code / Standard
- j) remove and dispose of redundant electrical cable, earthing wires, etc as relevant. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- k) supply, place and compact with [material] backfill to depth of [mm] as specified in [reference design]
- l) supply, place and compact with [material] backfill to natural surface as specified in [reference design], and
- m) reinstate landscaping, turf, footpaths, pavements as specified in [reference design].

Item 22265 Removal and disposal of abandoned power pole

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) verify with relevant Electrical Authority the Transport and Main Roads Representative / Administrator that the asset is dead and abandoned
- c) verify with the relevant Electrical Authority and the Transport and Main Roads Representative / Administrator the extent of abandoned asset to be removed
- d) carrying out all necessary excavations and works required to facilitate complete removal of pole. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- e) provide all plant required to facilitate complete removal of power pole
- f) temporary support / protect all other utility authority conduits, cables, pipes where/as required

- g) all surface preparation works to facilitate removal or redundant asset
- h) disposal of contaminated material
- i) disposal of abandoned / decommissioned assets
- j) use or dispose of excavated materials in accordance with the current legislation
- k) supply, place and compact with [*material*] backfill to depth of [*mm*] as specified in [*reference design*]
- l) supply, place and compact with [*material*] backfill to natural surface as specified in [*reference design*], and
- m) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22266 Removal and disposal of abandoned transmission tower

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) verify with relevant Electrical Authority the Transport and Main Roads Representative / Administrator that the asset is dead and abandoned
- c) verify with the relevant Electrical Authority and the Transport and Main Roads Representative / Administrator the extent of abandoned asset to be removed
- d) carrying out all necessary excavations required to facilitate demolition and removal of transmission tower and/or transmission tower footings. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- e) carrying out all necessary works required to facilitate demolition and complete removal of transmission tower. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- f) carrying out all necessary works required to facilitate demolition and removal of transmission tower footings as specified in [*reference design*]. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- g) temporary support / protect all other utility authority conduits, cables, pipes where/as required
- h) all surface preparation works to facilitate removal or redundant asset
- i) disposal of contaminated material
- j) disposal or salvage and abandoned / decommissioned assets
- k) use or dispose of excavated materials in accordance with the current legislation
- l) supply, place and compact with [*material*] backfill to depth of [*mm*] as specified in [*reference design*]
- m) supply, place and compact with [*material*] backfill to natural surface as specified in [*reference design*], and
- n) Reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22267 Removal and disposal of abandoned [*pole mounted* | *pad mounted*] transformer

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) verify with relevant Electrical Authority the Transport and Main Roads Representative / Administrator that the asset is dead and abandoned
- c) verify with the relevant Electrical Authority and the Transport and Main Roads Representative / Administrator the extent of abandoned asset to be removed
- d) carrying out all necessary works and provide all plant required to facilitate removal of abandoned pad mount transformer. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- e) all surface preparation works to facilitate removal or redundant asset
- f) demolition, removal and disposal of concrete pad
- g) cutting of conduits
- h) temporary support / protection of other utility assets
- i) disposal or salvage and abandoned / decommissioned assets, and
- j) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

2.3.4 Telecommunications Network

Contractor to confirm location of all telecommunication (underground and overhead) prior to undertaking earthworks/auxiliary activities within the works area. Where telecommunication assets are found to conflict with proposed design, contractor must notify the Administrator immediately advising on location and nature of the conflict.

Contractors to ensure that clearances to Telecommunication infrastructure is maintained during construction in accordance with Utility Authority requirements and vibration around conduits is minimised and adheres to Utility Owner specifications to ensure that the proposed works do not impact on existing infrastructure.

Often more than one standard, department and Utility will apply, engineers must reconcile and negotiate standards to ensure overall safety.

Item 22351 Telecommunications design

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*, and
- b) all design work associated with relocation / protection of electricity network assets.

Item 22352 Supply, install, test and commissioning of [product type] communications conduit, DN [diameter] mm in accordance with [reference design] and to [Telecommunications Authority] standard (trenching only)

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply all materials
- c) carrying out localised excavations, including all necessary road pavement materials and bound material
- d) supply, assemble, install and remove all shoring equipment required for excavations exceeding 1.5 m
- e) utilising or disposing of excavated material
- f) placing and compacting foundation bedding material and haunch zone material
- g) prefabricating materials where required
- h) cartage of all components from the storage site
- i) placing detectable marker tape, hazard board, etc above conduit, as per relevant code
- j) laying and jointing or placing and assembling all conduit components including service pits, hauling ropes, etc
- k) temporary support of other utility authority conduits, cables, pipes where required
- l) cutting conduit components as required
- m) supply, place, finish and cure concrete, as required
- n) performing plastic welding / jointing as required for the works
- o) supply and placing Geotextile or equivalent where required as specified on design drawings
- p) supply, placing and compacting backfill material (side zone and overlay zones)
- q) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard and road authority standard, (including soil compaction, concrete testing, and any other testing process as specified), and
- r) reinstate landscaping, turf, footpaths, pavements as specified in [reference design].

Item 22353 Supply, install, test and commissioning of [product type] communications conduit, DN [diameter] mm in accordance with [reference design] and to [Telecommunications Authority] standard (directional drilling / micro tunnelling)

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply all materials
- c) carrying out localised excavations, including all necessary road pavement materials and bound material

- d) supply, assemble, install and remove all shoring equipment required for excavations exceeding 1.5 m
- e) mobilise drilling / micro tunnelling rig
- f) undertaking all drilling / micro tunnelling works (and associated works) required for the works
- g) stringing and installation of conduits, assembling all conduit components including service pits, hauling ropes, etc
- h) grouting
- i) cutting conduit components as required
- j) performing plastic welding / jointing as required for the works
- k) utilising or disposing of excavated material
- l) prefabricating materials where required
- m) cartage of all components from the storage site
- n) placing detectable marker tape, hazard board, surface markers, etc above conduit entrance / exit, as per relevant code
- o) temporary support of other utility authority conduits, cables, pipes where required
- p) supply, place, finish and cure concrete, as required
- q) supply and placing Geotextile or equivalent where required as specified on design drawings
- r) supply, place and compact backfill [*material*]
- s) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard and road authority standard, (including soil compaction, concrete testing, and any other testing process as specified), and
- t) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22354 Supply, install test and commissioning of service pit [*type*] in accordance with [*reference design*] and [*Telecommunications Authority*] standard

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply all materials
- c) carrying out localised excavations, including all necessary road pavement materials and bound material
- d) utilising or disposing of excavated material
- e) placing and compacting foundation bedding material
- f) prefabricating materials where required
- g) cartage of all components from the storage site
- h) placing detectable marker tape, hazard board, signage, pavement markers, etc as per relevant code

- i) laying and jointing or placing and assembling all service pit components
- j) temporary support of other utility authority conduits, cables, pipes where required
- k) cutting conduit components as required
- l) supply, place, finish and cure concrete, as required
- m) performing plastic welding / jointing as required for the works
- n) supply and placing Geotextile or equivalent where required as specified on design drawings
- o) supply, placing and compacting backfill material (side zone and overlay zones)
- p) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard, (including soil compaction, concrete testing, and any other testing process as specified), and
- q) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22355 Supply, install, test and commissioning of access / service chamber in accordance with [*reference design*] and [*Telecommunications Authority*] standard

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) carrying out localised excavations, including all necessary road pavement materials and bound material
- d) supply, assemble, install and remove all shoring equipment required for excavations exceeding 1.5 m
- e) utilising or disposing of excavated material
- f) placing and compacting foundation bedding material
- g) placing and compacting backfill material (side zone and overlay zones)
- h) placing Geotextile or equivalent as specified on design drawings
- i) prefabricating materials where required
- j) cartage of materials from the storage site
- k) placing detectable marker tape, hazard board, signage, and so on, as per relevant code
- l) supplying laying and jointing or placing and assembling access chamber components, and so on as specified in [*reference design*]
- m) temporary support of other utility authority conduits, cables, pipes where/as required
- n) cutting conduit and access chamber components as required
- o) supply, place, finish and cure concrete
- p) supply, place finish blockwork

- q) performing butt welding, collar welding jointing and all other jointing / welding as required for the works
- r) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard and road authority standard, (including soil compaction, concrete testing, and any other testing process as specified), and
- s) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22356 Supply, install (haul) [size | type] communications cable in underground conduits in accordance with [*Telecommunications Authority*] standard (excluding fibre optic)

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply all materials
- c) cartage of all components from the storage site
- d) surface preparation works to facilitate hauling and installation of cable
- e) all works and plant required for hauling and installation activity
- f) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard, and
- g) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22357 Supply, install (haul) [size | type] fibre optic communications cable in underground conduits in accordance with [*Telecommunications Authority*] standard

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply all materials
- c) cartage of all components from the storage site
- d) surface preparation works to facilitate hauling and installation of cable
- e) all works and plant required for hauling and installation activity
- f) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard, and
- g) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22358 Supply, install test and commissioning of Mobile Tower in accordance with [*reference design*] and [*Telecommunications Authority*] standard

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) verify Transport and Main Roads Strategic Property Management has provided a licence agreement for installation of telecommunication mobile phone transmission tower

- c) supply all materials
- d) cartage of all components from the storage site
- e) surface preparation works to facilitate transmission tower installation
- f) carrying out all necessary works and supply all necessary plant required for mobile phone transmission tower footings and earth grid as specified in *[reference design]*. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- g) temporary support / protect all other utility authority conduits, cables, pipes where/as required
- h) disposal of contaminated material
- i) supply, place and compact with *[material]* backfill to depth of *[mm]* as specified in *[reference design]*
- j) all works and plant required for transmission tower assembly and installation
- k) place, finish and cure concrete, as required
- l) all works and plant required for transmission tower commissioning
- m) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard, (including soil compaction, concrete testing, and any other testing process as specified), and
- n) reinstate landscaping, turf, footpaths, pavements as specified in *[reference design]*.

Item 22359 Jointing / connection, test and commission of telecommunication cable to live network [size | type] [fibre optic | other]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) temporary support of other utility authority conduits, cables, pipes where/as required
- d) all Intervention planning and community notification requirements to maintain telecommunication service
- e) all commissioning and de-commissioning requirements
- f) cutting conduit/ cable components where necessary
- g) all jointing as specified in *[reference design]*
- h) temporary surface treatment where required, to facilitate connection works
- i) cartage of fitting components from the storage site
- j) all work shall be carried out in accordance with the provisions of the contract documents and to the satisfaction of the relevant telecommunication authority's representative and the Transport and Main Roads Representative / Administrator, and
- k) reinstate landscaping, turf, footpaths, pavements as specified in *[reference design]*.

Item 22360 [Raising | Lowering] telecommunications access / service chamber in accordance with [reference design]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all plant and materials required for the works
- c) verify with Transport and Main Roads Representative / Administrator the finished surface level required for the access / service chamber
- d) carrying out localised excavations, including all necessary road pavement materials and bound material
- e) supply, assemble, install and remove all shoring equipment required for excavations exceeding 1.5 m
- f) utilising or disposing of excavated material
- g) placing and compacting backfill material (side zone and overlay zones)
- h) placing Geotextile or equivalent as specified on design drawings
- i) prefabricating materials where required
- j) cartage of materials from the storage site
- k) demolish, remove and dispose of redundant access / service chamber components, etc as relevant. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- l) placing detectable marker tape, hazard board, signage, and so on, as per relevant code
- m) supplying laying and jointing or placing and assembling access chamber components, and so on as specified in [reference design]
- n) supply assemble and install temporary protection for telecommunication cable
- o) temporary support of other utility authority conduits, cables, pipes where/as required
- p) cutting conduit and access chamber components as required
- q) supply, place, finish and cure concrete
- r) supply, place finish blockwork
- s) performing butt welding, collar welding jointing and all other jointing / welding as required for the works
- t) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard and road authority standard, (including soil compaction, concrete testing, and any other testing process as specified), and
- u) reinstate landscaping, turf, footpaths, pavements as specified in [reference design].

Item 22361 Remove and dispose of abandoned telecommunication [AC pits | pits] in accordance with [reference design]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) verify with relevant Telecommunication Authority the Transport and Main Roads Representative / Administrator that the telecommunication pits are dead and abandoned
- d) verify with the relevant Telecommunication Authority and the Transport and Main Roads Representative / Administrator the telecommunication pits to be removed.
- e) carrying out all necessary excavations;
- f) temporary support of other utility authority conduits, cables, pipes where/as required
- g) demolish, remove and dispose identified telecommunication surface / location markers, concrete surrounds, surface boxes, etc as relevant. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- h) cutting conduit components as required
- i) concrete end plugs (N20/20 – unreinforced concrete) to all abandoned telecommunication conduits left in place, if ordered. Concrete ends to be 500 mm minimum thickness and completely seal ends of mains
- j) all works and disposal of contaminated material associate with cutting, dewater and decontaminating of abandoned / decommissioned telecommunication pits
- k) utilise or dispose of excavated material not contaminated by AC material
- l) disposal of AC material in accordance with the current legislation
- m) dispose of all potentially contaminated AC excavated material in accordance with the current legislation
- n) supply, place and compact with [material] backfill to depth of [mm] as specified in [reference design]
- o) supply, place and compact with [material] backfill to natural surface as specified in [reference design]
- p) all work shall be carried out in accordance with the provisions of the contract documents and to the satisfaction of the relevant Utility Authority's representative and the Transport and Main Roads Representative / Administrator, and
- q) reinstate landscaping, turf, footpaths, pavements as specified in [reference design].

Item 22362 Removal and disposal of abandoned telecommunication [AC conduits | conduits] in accordance with [reference design]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) verify with relevant telecommunication authority and the Transport and Main Roads Representative / Administrator that the telecommunication conduit is dead and abandoned
- d) verify with the relevant telecommunication authority and the Transport and Main Roads Representative / Administrator the length of telecommunication conduit to be removed
- e) carrying out all necessary excavations
- f) temporary support of other utility authority conduits, cables, pipes where/as required
- g) demolish, remove and dispose identified telecommunication surface / location markers, conduits, envelopers, etc as relevant. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- h) cutting conduit components as required
- i) concrete end plugs (N20/20 – unreinforced concrete) to all abandoned telecommunication conduits left in place, if ordered. Concrete ends to be 500 mm minimum thickness and completely seal ends of mains
- j) all works and disposal of contaminated material associate with cutting, dewater and decontaminating of abandoned / decommissioned telecommunication conduits
- k) utilise or dispose of excavated material not contaminated by AC material
- l) disposal of AC material in accordance with the current legislation
- m) dispose of all potentially contaminated AC excavated material in accordance with the current legislation
- n) supply, place and compact with [material] backfill to depth of [mm] as specified in [reference design]
- o) supply, place and compact with [material] backfill to natural surface as specified in [reference design]
- p) all work shall be carried out in accordance with the provisions of the contract documents and to the satisfaction of the relevant Utility Authority's representative and the Transport and Main Roads Representative / Administrator, and
- q) reinstate landscaping, turf, footpaths, pavements as specified in [reference design].

Item 22363 Removal and disposal of redundant telecommunications cable (above ground)

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all plant and materials required for the works

- c) verify with relevant telecommunication authority and the Transport and Main Roads Representative / Administrator that the telecommunication cable is dead and abandoned
- d) verify with the relevant telecommunication authority and the Transport and Main Roads Representative / Administrator the length of telecommunication cable to be removed
- e) all surface preparation works to facilitate removal or redundant telecommunication cable
- f) all works required for removal of redundant telecommunication cable, including decommissioning
- g) undertaking all testing and de-commissioning requirements as per the relevant telecommunication authority Code / Standard
- h) remove and dispose of redundant telecommunication cable, etc as relevant. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*, and
- i) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22364 Removal and disposal of redundant telecommunications cable (underground)

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all plant and materials required for the works
- c) verify with relevant telecommunication authority and the Transport and Main Roads Representative / Administrator that the telecommunication cable is dead and abandoned
- d) verify with the relevant telecommunication authority and the Transport and Main Roads Representative / Administrator the length of telecommunication cable to be removed
- e) all surface preparation works to facilitate removal or redundant telecommunication cable
- f) localised excavation to facilitate removal of redundant cable
- g) dispose or utilise excavated material
- h) all works required for removal of redundant telecommunication cable, including decommissioning
- i) undertaking all testing and de-commissioning requirements as per the relevant telecommunication authority Code / Standard
- j) remove and dispose of redundant telecommunication cable, etc as relevant. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- k) supply, place and compact with [*material*] backfill to depth of [*mm*] as specified in [*reference design*]
- l) supply, place and compact with [*material*] backfill to natural surface as specified in [*reference design*], and
- m) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22365 Demolition, removal and disposal of telecommunication access chamber in accordance with [reference design]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all plant and materials required for the works
- c) verify with Transport and Main Roads Representative / Administrator the extent of the chamber to be demolished and removed
- d) carrying out localised excavations, including all necessary road pavement materials and bound material
- e) supply, assemble, install and remove all shoring equipment required for excavations exceeding 1.5 m
- f) utilising or disposing of excavated material
- g) cartage of materials from the storage site
- h) demolish, remove and dispose of redundant access / service chamber components, etc as relevant. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- i) temporary support of other utility authority conduits, cables, pipes where/as required
- j) cutting conduit and access chamber components as required
- k) undertaking all testing and de-commissioning requirements as per the relevant telecommunication authority Code / Standard
- l) remove and dispose of redundant telecommunication cable, etc as relevant. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- m) supply, place and compact with [material] backfill to depth of [mm] as specified in [reference design]
- n) supply, place and compact with [material] backfill to natural surface as specified in [reference design]
- o) placing Geotextile or equivalent as specified on design drawings
- p) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard and road authority standard, (including soil compaction, and any other testing process as specified)
- q) reinstate landscaping, turf, footpaths, pavements as specified in [reference design].

Item 22366 Demolition, removal and disposal of telecommunication Mobile tower in accordance with [reference design]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply all materials

- c) verify with relevant telecommunication authority the Transport and Main Roads Representative / Administrator that the asset is dead and abandoned
- d) verify with the relevant telecommunication authority and the Transport and Main Roads Representative / Administrator the extent of abandoned asset to be removed
- e) all decommissioning works, including removal of all electrical supply connections
- f) carrying out all necessary excavations required to facilitate demolition and removal of mobile phone transmission tower. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- g) carrying out all necessary works and supply all necessary plant required to facilitate demolition and removal of mobile phone transmission tower footings and earth grid as specified in [reference design]. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- h) temporary support / protect all other utility authority conduits, cables, pipes where/as required
- i) all surface preparation works to facilitate removal or redundant asset
- j) disposal of contaminated material
- k) disposal or salvage and abandoned / decommissioned assets
- l) use or dispose of excavated materials in accordance with the current legislation
- m) supply, place and compact with [material] backfill to depth of [mm] as specified in [reference design]
- n) supply, place and compact with [material] backfill to natural surface as specified in [reference design], and
- o) reinstate landscaping, turf, footpaths, pavements as specified in [reference design].

2.3.5 Water

In addition to the design drawings, all Water Main Relocation Works (including material properties) shall be in accordance with the relevant Utility Authority specifications, standards and typical details. The contractor shall ensure all work method statements and inspection hold point documentation is built around the relevant Utility Authority's specifications to ensure that the design intent is met.

Contractor to confirm location of all water assets prior to undertaking earthworks / auxiliary activities within the works area. Where assets are found to conflict with proposed design, contractor must notify the Administrator immediately advising on location and nature of the conflict.

Contractors to ensure that clearances to water and sewer infrastructure is maintained during construction in accordance with the relevant Utility Authority requirements to ensure that the proposed works do not impact on existing infrastructure.

Often more than one standard, department and Utility will apply, engineers must reconcile and negotiate standards to ensure overall safety.

Item 22451 Supply, install, test and commissioning of [product type] water main, DN [diameter] mm [pressure rating] in accordance with [reference design]. Constructed to [SEQ Code Standards | Water Supply Code of Australia | Utility Owner specific standard] (includes all welding and or jointing requirements) (excludes valves)

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) carrying out localised excavations, including all necessary road pavement materials and bound material
- d) supply, assemble, install and remove all shoring equipment required for excavations exceeding 1.5 m
- e) utilising or disposing of excavated material
- f) placing and compacting foundation bedding material and haunch zone material
- g) prefabricating materials where required
- h) cartage of pipe components from the storage site
- i) installing pipe envelopers as specified on design drawings. This shall include supply, installation and commissioning of plastic spacers, grout annulus between encasing pipe and water pipes, waterproofing foam sealants and any other requirements specified in the design
- j) placing detectable marker tape above pipe (entire length) as per SEQ or relevant code
- k) supply, placing and compacting backfill material (including side zone and overlay zones)
- l) laying and jointing or placing and assembling pipe components including support pads, saddle clamp pipe supports where specified
- m) temporary support of other utility authority conduits, cables, pipes where/as required
- n) cutting pipe components where necessary
- o) constructing thrust blocks as per design requirements
- p) finishing and curing concrete
- q) performing butt welding, collar welding jointing where necessary
- r) supply and placing Geotextile or equivalent where required as specified on design drawings
- s) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard, and
- t) reinstate landscaping, turf, footpaths, pavements as specified in [reference design].

Item 22452 Supply, install, test and commissioning of water [valve type | size], in accordance with [reference design]. Constructed to [SEQ Code Standards | Water Supply Code of Australia | Utility Owner specific standard]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) carrying out localised excavations, including all necessary road pavement materials and bound material
- d) supply, assemble, install and remove all shoring equipment required for excavations exceeding 1.5 m
- e) utilising or disposing of excavated material
- f) placing and compacting foundation bedding material, as required
- g) prefabricating materials where required
- h) cartage of valve components from the storage site
- i) placing detectable valve markers / posts as per SEQ or relevant code
- j) laying and jointing or placing and assembling of valve components including support pads, saddle clamp pipe supports where specified
- k) temporary support of other utility authority conduits, cables, pipes where/as required
- l) cutting pipe components where necessary
- m) constructing thrust blocks as per design requirements
- n) constructing valve pits, as required
- o) installing surface boxes and surface fittings where specified
- p) finishing and curing concrete
- q) performing butt welding, collar welding jointing where necessary
- r) supply and placing Geotextile or equivalent where required as specified on design drawings
- s) supply, placing and compacting backfill material (including side zone and overlay zones)
- t) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard, and
- u) reinstate landscaping, turf, footpaths, pavements as specified in [reference design].

Item 22453 Supply, install, test and commissioning of [diameter] mm access chamber in accordance with [reference design]. Constructed to [SEQ Code Standards | Water Supply Code of Australia | Utility Owner specific standard] (includes aspro risers and chamber cover)

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials

- c) carrying out localised excavations, including all necessary road pavement materials and bound material
- d) supply, assemble, install and remove all shoring equipment required for excavations exceeding 1.5 m
- e) utilising or disposing of excavated material
- f) placing and compacting foundation bedding material, as required
- g) prefabricating materials where required
- h) cartage of all components from the storage site
- i) laying and jointing or placing and assembling of access chamber components including epoxy sealing, trafficable lids, and so on as specified in [*reference design*]
- j) temporary support of other utility authority conduits, cables, pipes where/as required
- k) cutting pipe components where necessary
- l) finishing and curing concrete
- m) supply and placing Geotextile or equivalent where required as specified on design drawings
- n) supply, placing and compacting backfill material as specified in [*reference design*]
- o) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard, and
- p) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22454 Supply, installation, testing and commissioning of [*diameter*] mm [*type*]. Fire Hydrant Arrangement in accordance with [*reference design*]. Constructed to [*SEQ Code Standards | Water Supply Code of Australia | Utility Owner specific standard*]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) supply and installation of temporary blank flanges where required
- d) carrying out localised excavations, including all necessary road pavement materials and bound material
- e) temporary support of other utility authority conduits, cables, pipes where/as required
- f) surface treatment where required, including scour protection at scour valve discharging points, restoration of existing / proposed surface as required
- g) prefabricating fitting components where required
- h) cartage of fitting components from the storage site
- i) laying and jointing including butt welding, collar welding as per the design drawings
- j) placing and assembling fitting components
- k) constructing thrust blocks where specified

- l) finishing and curing concrete
- m) cutting pipe components where necessary
- n) supply, placing and compacting backfill material (including side zone and overlay zones)
- o) installing surface boxes and surface fittings where specified
- p) testing by an approved NATA approved authority as per the relevant Utility Authority Code including soil compaction, bacteriological testing, pressure testing and any other testing as required, and
- q) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

**Item 22455 Supply and install thrust block in accordance with [*reference design*].
Constructed to [*SEQ Code Standards | Water Supply Code of Australia | Utility
Owner specific standard*] if not order as part of item 22451**

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply and install of all materials including all reinforcement, formwork and false work
- c) carrying out localised excavations, including all necessary road pavement materials and bound material
- d) temporary support of other utility authority conduits, cables, pipes where/as required
- e) supply, place and compact backfill material
- f) undertaking all work in accordance with relative utility authority requirements, and
- g) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

**Item 22456 Live Connection works DN [*diameter*] mm [*type | material*] water [*transmission |
distribution*] main in accordance with [*reference design*]**

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) carrying out localised excavations, including all necessary road pavement materials and bound material
- d) supply, assemble, install and remove all shoring equipment required for excavations exceeding 1.5 m
- e) temporary support of other utility authority conduits, cables, pipes where/as required
- f) all Intervention planning and community notification requirements to maintain water supply to Utility Authority customers
- g) cutting pipe components where necessary
- h) all welding and/or jointing as specified in [*reference design*]
- i) temporary surface treatment where required, to facilitate live connection works
- j) prefabricating fitting components where required

- k) cartage of fitting components from the storage site
- l) placing and assembling fitting components
- m) constructing thrust blocks where specified (including reinforcement)
- n) placing, finishing and curing concrete (including reinforcement)
- o) testing by an approved NATA approved authority as per the relevant Utility Authority Code including soil compaction, bacteriological testing, pressure testing and any other testing / decontamination process as required
- p) utilise or dispose of excavated material
- q) supply, place and compact with [*material*] backfill to depth of [*mm*] as specified in [*reference design*]
- r) supply, place and compact with [*material*] backfill to natural surface as specified in [*reference design*]
- s) all work shall be carried out in accordance with the provisions of the contract documents and to the satisfaction of the relevant Utility Authority's representative and the Transport and Main Roads Representative / Administrator, and
- t) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22457 Structural relining DN [*diameter*] mm water main in accordance with [*reference design*]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) prefabricating materials where required
- d) cartage of all components from the storage site
- e) laying and jointing or placing and assembling of structural relining components as specified in [*reference design*]
- f) temporary support of other utility authority conduits, cables, pipes where/as required
- g) cutting pipe components where necessary
- h) placing, finishing and curing concrete, as required
- i) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard, and
- j) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22458 Modification / adjustment of existing scour / air valves in accordance with [*Reference Drawings*].

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials

- c) carrying out localised excavations, including all necessary road pavement materials and bound material
- d) temporary support of other utility authority conduits, cables, pipes where/as required
- e) all works and disposal of contaminated material associate with cutting, dewater and decontaminating scour valve and associate water main
- f) temporary surface treatment where required, including scour protection at scour valve discharging points
- g) prefabricating fitting components where required
- h) cartage of fitting components from the storage site
- i) placing and assembling fitting components
- j) placing, finishing and curing concrete (including all reinforcement requirements)
- k) cutting pipe components where necessary
- l) installing surface boxes and surface fittings where specified
- m) testing by an approved NATA approved authority as per the relevant Utility Authority Code including soil compaction, bacteriological testing, pressure testing and any other testing as required
- n) utilise or dispose of excavated material
- o) supply, place and compact with [material] backfill to depth of [mm] as specified in [reference design]
- p) supply, place and compact with [material] backfill to natural surface as specified in [reference design]
- q) all work shall be carried out in accordance with the provisions of the contract documents and to the satisfaction of the relevant Utility Authority's representative and the Transport and Main Roads Representative / Administrator, and
- r) reinstate landscaping, turf, footpaths, pavements as specified in [reference design].

Item 22459 Treatment of abandoned [type] DN [diameter] mm water main left insitu [including AC | excluding AC] in accordance with [reference design]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) verify with relevant Utility Authority the Transport and Main Roads Representative / Administrator if the water / sewer main is dead and abandoned
- d) verify with the relevant Utility Authority and the Transport and Main Roads Representative / Administrator the extent of the abandoned water / sewer main to be left in situ/ grouted/ plugged
- e) all careful excavation operations to expose the abandoned section of water / sewer main to allow for flowable filling / grouting and/or plugging

- f) temporary support of other utility authority conduits, cables, pipes where/as required
- g) all works associated with the cutting, dewatering and decontamination of the abandoned section of water/ sewer main and the removal of cut ends, if ordered. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- h) concrete end plugs (N20/20 – unreinforced concrete) to all abandoned water / sewer mains left in place. Concrete ends to be 500 mm minimum thickness and completely seal ends of mains, if ordered
- i) backfill nominated abandoned water / sewer mains with flowable fill / grout as detailed in [reference design]
- j) supply, place and compact excavations with [material]
- k) disposal of excavated material
- l) disposal of all removed AC material
- m) all work shall be carried out in accordance with the relevant provisions of the contract documents and to the satisfaction of the relevant Utility Authority's representative and the Transport and Main Roads Representative / Administrator, and
- n) reinstate landscaping, turf, footpaths, pavements as specified in [reference design].

Item 22460 **Removal and disposal of redundant OD [diameter] mm [type | material] water main [including AC | excluding AC] in accordance with [reference design] undertaken as per [SEQ Code Standards | Water Supply Code of Australia | Utility Owner specific standard] including pits, valves and hydrants**

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) verify with relevant Utility Authority the Transport and Main Roads Representative / Administrator that the water main is dead and abandoned
- d) verify with the relevant Utility Authority and the Transport and Main Roads Representative / Administrator the extent of abandoned water main to be removed
- e) carrying out all necessary excavations
- f) temporary support of other utility authority conduits, cables, pipes where/as required
- g) remove identified water mains including any surface / underground fittings, concrete surrounds, surface boxes, location markers, thrust blocks, envelopers, valves, pits, hydrants, etc as relevant. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- h) concrete end plugs (N20/20 – unreinforced concrete) to all abandoned mains left in place, if ordered. Concrete ends to be 500 mm minimum thickness and completely seal ends of mains
- i) all works and disposal of contaminated material associate with cutting, dewater and decontaminating of abandoned / decommission water lines

- j) utilise or dispose of excavated materials
- k) stack removed pipes or end structure components
- l) transport of all materials selected for salvage to the nominated storage site. Dispose of all material not identified for salvage
- m) supply, place and compact with [*material*] backfill to depth of [*mm*] as specified in [*reference design*]
- n) supply, place and compact with [*material*] backfill to natural surface as specified in [*reference design*]
- o) all work shall be carried out in accordance with the provisions of the contract documents and to the satisfaction of the relevant Utility Authority's representative and the Transport and Main Roads Representative / Administrator, and
- p) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22461 Removal and disposal of abandoned thrust blocks

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) verify with the relevant utility authority and with the Transport and Main Roads Representative / Administrator that the thrust block is no longer required
- d) verify with the Utility Authority and the Transport and Main Roads Representative / Administrator the extent of the thrust block to be removed
- e) all careful excavation operations to expose the abandoned thrust block to be removed (including shoring, if required)
- f) temporary support of other utility authority conduits, cables, pipes where/as required
- g) removal and disposal of the thrust block material. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- h) utilise or dispose of excavated material
- i) supply, place and compact with [*material*] backfill to depth of [*mm*] as specified in [*reference design*]
- j) supply, place and compact with [*material*] backfill to natural surface as specified in [*reference design*]
- k) all work shall be carried out in accordance with the provisions of the contract documents and to the satisfaction of the relevant Utility Authority's representative and the Transport and Main Roads Representative / Administrator, and
- l) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22462 Removal and disposal of abandoned pits, valves, hydrants

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) verify with the relevant utility authority and with the Transport and Main Roads Representative / Administrator that the pits / valves / hydrants are / is no longer required
- d) verify with the Utility Authority and the Transport and Main Roads Representative / Administrator the extent of the pits / valves / hydrants to be removed
- e) all careful excavation operations to expose the abandoned pits / valves / hydrants be removed (including shoring, if required)
- f) temporary support of other utility authority conduits, cables, pipes where/as required
- g) transport of all materials selected for salvage to the nominated storage site
- h) removal and disposal all pits, valves, hydrants not identified for salvage. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- i) utilise or dispose of excavated material
- j) supply, place and compact with [*material*] backfill to depth of [*mm*] as specified in [*reference design*]
- k) supply, place and compact with [*material*] backfill to natural surface as specified in [*reference design*]
- l) all work shall be carried out in accordance with the provisions of the contract documents and to the satisfaction of the relevant Utility Authority's representative and the Transport and Main Roads Representative / Administrator, and
- m) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

2.3.6 Waste water / Sewer

In addition to the design drawings, all Sewer Main Relocation Works (including material properties) shall be in accordance with the relevant Utility Authority specifications, standards and typical details. The contractor shall ensure all work method statements and inspection hold point documentation is built around the relevant Utility Authority's specifications to ensure that the design intent is met.

Contractor to confirm location of all sewer assets prior to undertaking earthworks/auxiliary activities within the works area. Where assets are found to conflict with proposed design, contractor must notify the Administrator immediately advising on location and nature of the conflict.

Contractors to ensure that clearances to water and sewer infrastructure is maintained during construction in accordance with the relevant Utility Authority requirements to ensure that the proposed works do not impact on existing infrastructure.

Often more than one standard, department and Utility will apply, engineers must reconcile and negotiate standards to ensure overall safety.

Item 22551 Supply, install, test and commissioning of [product type] rising sewer, DN [diameter] mm [pressure rating] in accordance with [reference design]. Constructed to [SEQ Code Standards | Water Supply Code of Australia | Utility Owner specific standard] (includes all welding and or jointing requirements) (excludes valves, vents, chambers)

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) carrying out localised excavations, including all necessary road pavement materials and bound material
- d) supply, assemble, install and remove all shoring equipment required for excavations exceeding 1.5 m
- e) utilising or disposing of excavated material
- f) placing and compacting foundation bedding material and haunch zone material
- g) prefabricating materials where required
- h) cartage of pipe components from the storage site
- i) installing pipe envelopers as specified on design drawings. This shall include supply, installation and commissioning of plastic spacers, grout annulus between encasing pipe and sewer pipes, waterproofing foam sealants and any other requirements specified in the design
- j) placing detectable marker tape above pipe (entire length) as per SEQ or relevant code
- k) laying and jointing or placing and assembling pipe components including support pads, saddle clamp pipe supports where specified
- l) temporary support of other utility authority conduits, cables, pipes where/as required
- m) cutting pipe components where necessary
- n) constructing thrust blocks as per design requirements
- o) finishing and curing concrete
- p) performing butt welding, collar welding jointing where necessary
- q) supply and placing Geotextile or equivalent where required as specified on design drawings
- r) supply, placing and compacting backfill material (including side zone and overlay zones)
- s) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard, and
- t) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22552 Supply, install, test and commissioning of rising sewer [valve type | size], in accordance with [reference design]. Constructed to [SEQ Code Standards | Water Supply Code of Australia | Utility Owner specific standard]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) carrying out localised excavations, including all necessary road pavement materials and bound material
- d) supply, assemble, install and remove all shoring equipment required for excavations exceeding 1.5 m
- e) utilising or disposing of excavated material
- f) placing and compacting foundation bedding material, as required
- g) prefabricating materials where required
- h) cartage of valve components from the storage site
- i) placing detectable valve markers / posts as per SEQ or relevant code
- j) laying and jointing or placing and assembling of valve components including support pads, saddle clamp pipe supports where specified
- k) temporary support of other utility authority conduits, cables, pipes where/as required
- l) cutting pipe components where necessary
- m) constructing thrust blocks as per design requirements
- n) constructing valve pits, as required
- o) installing surface boxes and surface fittings where specified
- p) finishing and curing concrete
- q) performing butt welding, collar welding jointing where necessary
- r) supply and placing Geotextile or equivalent where required as specified on design drawings
- s) supply, placing and compacting backfill material (including side zone and overlay zones)
- t) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard, and
- u) reinstate landscaping, turf, footpaths, pavements as specified in [reference design].

Item 22553 Supply, install, test and commissioning of rising sewer chamber in accordance with [reference design]. Constructed to [SEQ Code Standards | Water Supply Code of Australia | Utility Owner specific standard]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials

- c) carrying out localised excavations, including all necessary road pavement materials and bound material
- d) supply, assemble, install and remove all shoring equipment required for excavations exceeding 1.5 m
- e) utilising or disposing of excavated material
- f) placing and compacting foundation bedding material, as required
- g) prefabricating materials where required
- h) cartage of all components from the storage site
- i) laying and jointing or placing and assembling of access chamber components including epoxy sealing, trafficable lids, and so on as specified in [*reference design*]
- j) temporary support of other utility authority conduits, cables, pipes where/as required
- k) cutting pipe components where necessary
- l) finishing and curing concrete
- m) supply and placing Geotextile or equivalent where required as specified on design drawings
- n) supply, placing and compacting backfill material as specified in [*reference design*]
- o) installation of rising sewer vent / odour filter as specified in [*reference design*]
- p) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard, and
- q) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22554 Supply install, test and commissioning of rising sewer vent in accordance with [*reference design*]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) carrying out localised excavations
- d) utilising or disposing of excavated material
- e) placing and compacting foundation bedding material, as required
- f) prefabricating materials where required
- g) cartage of all components from the storage site
- h) laying and jointing or placing and assembling of sewer vent/ odour control chamber components as specified in [*reference design*]
- i) temporary support of other utility authority conduits, cables, pipes where/as required
- j) cutting pipe components where necessary
- k) finishing and curing concrete
- l) supply, placing and compacting backfill material as specified in [*reference design*]

- m) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard, and
- n) reinstate landscaping, turf, footpaths, pavements as specified in *[reference design]*.

Item 22555 **Supply, install, test and commissioning of *[product type]* gravity sewer, DN *[diameter]* mm in accordance with *[reference design]*. Constructed to *[SEQ Code Standards | Water Supply Code of Australia | Utility Owner specific standard]* (includes all welding and or jointing requirements) (excludes access chambers)**

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) carrying out localised excavations, including all necessary road pavement materials and bound material
- d) supply, assemble, install and remove all shoring equipment required for excavations exceeding 1.5 m
- e) utilising or disposing of excavated material
- f) placing and compacting foundation bedding material and haunch zone material
- g) prefabricating materials where required
- h) cartage of pipe components from the storage site
- i) laying and jointing or placing and assembling pipe components
- j) installing pipe envelopers as specified on design drawings. This shall include supply, installation and commissioning of plastic spacers, grouting annulus between encasing pipe and sewer pipes, waterproofing foam sealants and any other requirements specified in the design
- k) temporary support of other utility authority conduits, cables, pipes where/as required
- l) placing detectable marker tape above pipe (entire length) as per SEQ or relevant code
- m) cutting pipe components where necessary
- n) finishing and curing concrete
- o) performing butt welding, collar welding jointing where necessary
- p) supply and placing Geotextile or equivalent where required as specified on design drawings
- q) supply, placing and compacting backfill material (including side zone and overlay zones)
- r) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard, and
- s) reinstate landscaping, turf, footpaths, pavements as specified in *[reference design]*.

**Item 22556 Supply and install thrust block in accordance with [reference design].
Constructed to [SEQ Code Standards | Water Supply Code of Australia | Utility
Owner specific standard] if not ordered as part of item 22551**

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply and install of all materials including all reinforcement, formwork and false work
- c) carrying out localised excavations, including all necessary road pavement materials and bound material
- d) temporary support of other utility authority conduits, cables, pipes where/as required
- e) supply, place and compact backfill material
- f) undertaking all work in accordance with relative utility authority requirements, and
- g) reinstate landscaping, turf, footpaths, pavements as specified in [reference design].

Item 22557 Structural relining DN [diameter] mm sewer in accordance with [reference design]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) prefabricating materials where required
- d) cartage of all components from the storage site
- e) laying and jointing or placing and assembling of structural relining components as specified in [reference design]
- f) temporary support of other utility authority conduits, cables, pipes where/as required
- g) cutting pipe components where necessary
- h) placing, Finishing and curing concrete, as required
- i) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard, and
- j) reinstate landscaping, turf, footpaths, pavements as specified in [reference design].

Item 22558 Treatment of abandoned [type] DN [diameter] mm [waste water | sewer] main left insitu [including AC | excluding AC] in accordance with [reference design]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) verify with relevant Utility Authority the Transport and Main Roads Representative / Administrator if the water / sewer main is dead and abandoned

- d) verify with the relevant Utility Authority and the Transport and Main Roads Representative / Administrator the extent of the abandoned water / sewer main to be left insitu / grouted / plugged
- e) all careful excavation operations to expose the abandoned section of water / sewer main to allow for flowable filling / grouting and/or plugging
- f) temporary support of other utility authority conduits, cables, pipes where/as required
- g) all works associated with the cutting, dewatering and decontamination of the abandoned section of water/ sewer main and the removal of cut ends, if ordered. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- h) concrete end plugs (N20/20 – unreinforced concrete) to all abandoned water / sewer mains left in place. Concrete ends to be 500 mm minimum thickness and completely seal ends of mains, if ordered
- i) backfill nominated abandoned water / sewer mains with flowable fill / grout as detailed in [reference design]
- j) supply, place and compact excavations with [material]
- k) disposal of excavated material
- l) all work shall be carried out in accordance with the relevant provisions of the contract documents and to the satisfaction of the relevant Utility Authority's representative and the Transport and Main Roads Representative / Administrator, and
- m) reinstate landscaping, turf, footpaths, pavements as specified in [reference design].

Item 22559 Treatment of abandoned sewer access chambers left insitu in accordance with [reference design]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) verify with relevant Utility Authority the Transport and Main Roads Representative / Administrator if the sewer access chamber and associated main is dead and abandoned
- d) verify with the relevant Utility Authority and the Transport and Main Roads Representative / Administrator the extent of abandoned sewer access chambers to be removed and the extent of remaining section to be filled and modified
- e) all careful excavation operations to expose the top section of abandoned sewer access chamber to be removed where required
- f) temporary support of other utility authority conduits, cables, pipes where/as required
- g) removal and disposal of that section of abandoned concrete access chamber material. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- h) all works associate with cutting, dewater, decontamination, etc

- i) concrete end plugs (N20/20 – unreinforced concrete) to all abandoned mains left in place, if ordered. Concrete ends to be 500 mm minimum thickness and completely seal ends of mains
- j) supply, place and compact with *[material]* backfill to depth of *[mm]* for remaining section of chamber left in place as specified in *[reference design]*
- k) supply, place and compact with *[material]* backfill to natural surface as specified in *[reference design]*
- l) all work shall be carried out in accordance with the provisions of the contract documents and to the satisfaction of the relevant Utility Authority's representative and the Transport and Main Roads Representative / Administrator, and
- m) Reinstate landscaping, turf, footpaths, pavements as specified in *[reference design]*.

Item 22560 Removal and disposal of redundant OD *[diameter]* mm *[type | material]* sewer mains *[including AC | Sewer Main]* in accordance with *[reference design]* undertaken as per *[SEQ Code Standards | Water Supply Code of Australia | Utility Owner specific standard]* including pits and valves (excluding access chambers)

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) verify with relevant Utility Authority the Transport and Main Roads Representative / Administrator that the sewer main is dead and abandoned
- d) verify with the relevant Utility Authority and the Transport and Main Roads Representative / Administrator the extent of abandoned sewer main to be removed
- e) carrying out all necessary excavations
- f) temporary support of other utility authority conduits, cables, pipes where/as required
- g) remove identified sewer mains including any surface / underground fittings, concrete surrounds, surface boxes, location markers, thrust blocks, envelopers, valves, pits, etc as relevant. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- h) concrete end plugs (N20/20 – unreinforced concrete) to all abandoned mains left in place, if ordered. Concrete ends to be 500 mm minimum thickness and completely seal ends of mains
- i) all works and disposal of contaminated material associate with cutting, dewater and decontaminating of abandoned / decommission sewer mains
- j) utilise or dispose of excavated materials
- k) transport of all materials selected for salvage to the nominated storage site. Dispose of all material not identified for salvage
- l) supply, place and compact with *[material]* backfill to depth of *[mm]* as specified in *[reference design]*
- m) supply, place and compact with *[material]* backfill to natural surface as specified in *[reference design]*

- n) all work shall be carried out in accordance with the provisions of the contract documents and to the satisfaction of the relevant Utility Authority's representative and the Transport and Main Roads Representative / Administrator, and
- o) reinstate landscaping, turf, footpaths, pavements as specified in *[reference design]*.

Item 22561 Removal and disposal of abandoned thrust blocks

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) verify with the relevant utility authority and with the Transport and Main Roads Representative / Administrator that the thrust block is no longer required
- d) verify with the Utility Authority and the Transport and Main Roads Representative / Administrator the extent of the thrust block to be removed
- e) all careful excavation operations to expose the abandoned thrust block to be removed (including shoring, if required)
- f) temporary support of other utility authority conduits, cables, pipes where/as required
- g) removal and disposal of the thrust block material. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- h) utilise or dispose of excavated material
- i) supply, place and compact with *[material]* backfill to depth of *[mm]* as specified in *[reference design]*
- j) supply, place and compact with *[material]* backfill to natural surface as specified in *[reference design]*
- k) all work shall be carried out in accordance with the provisions of the contract documents and to the satisfaction of the relevant Utility Authority's representative and the Transport and Main Roads Representative / Administrator, and
- l) reinstate landscaping, turf, footpaths, pavements as specified in *[reference design]*.

Item 22562 Demolition, removal and disposal of existing rising sewer vent / odour chamber in accordance with *[reference design]*

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) verify with relevant Utility Authority the Transport and Main Roads Representative / Administrator if the rising sewer vent / odour chamber and dead and abandoned
- d) verify with the relevant Utility Authority and the Transport and Main Roads Representative / Administrator the extent of abandoned rising sewer vent / odour chamber to be demolished, removed and disposed of

- e) all careful excavation operations (including shoring) required to demolish, remove and dispose of abandoned rising sewer vent / access chamber
- f) temporary support of other utility authority conduits, cables, pipes where/as required
- g) removal and disposal of abandoned rising sewer vent / odour chamber material. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act* (including AS material, if required)
- h) transport of all materials selected for salvage to the nominated storage site. Dispose of all material not identified for salvage
- i) all works associate with cutting, dewater, decontamination, etc
- j) concrete end plugs (N20/20 – unreinforced concrete) to all abandoned vent pipes left in place, if ordered. Concrete ends to be 500 mm minimum thickness and completely seal ends of mains
- k) supply, place and compact with [material] backfill to depth of [mm] as specified in [reference design]
- l) supply, place and compact with [material] backfill to natural surface as specified in [reference design]
- m) all work shall be carried out in accordance with the provisions of the contract documents and to the satisfaction of the relevant Utility Authority's representative and the Transport and Main Roads Representative / Administrator, and
- n) reinstate landscaping, turf, footpaths, pavements as specified in [reference design].

Item 22563 Demolition, removal and disposal of existing [sewer access chambers | rising sewer chamber] in accordance with [reference design]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) verify with relevant Utility Authority the Transport and Main Roads Representative / Administrator if the sewer access chamber and associated main is dead and abandoned
- d) verify with the relevant Utility Authority and the Transport and Main Roads Representative / Administrator the extent of abandoned sewer access chambers to be demolished, removed and disposed of
- e) all careful excavation operations (including shoring) required to expose abandoned sewer access chamber to be removed where required
- f) temporary support of other utility authority conduits, cables, pipes where/as required
- g) removal and disposal of abandoned access chamber material. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act* (including AS material, if required)
- h) all works associate with cutting, dewater, decontamination, etc

- i) concrete end plugs (N20/20 – unreinforced concrete) to all abandoned mains left in place, if ordered. Concrete ends to be 500 mm minimum thickness and completely seal ends of mains
- j) supply, place and compact with *[material]* backfill to depth of *[mm]* as specified in *[reference design]*
- k) supply, place and compact with *[material]* backfill to natural surface as specified in *[reference design]*
- l) all work shall be carried out in accordance with the provisions of the contract documents and to the satisfaction of the relevant Utility Authority's representative and the Transport and Main Roads Representative / Administrator, and
- m) reinstate landscaping, turf, footpaths, pavements as specified in *[reference design]*.

Item 22564 Live Connection works DN *[diameter]* mm *[type | material]* sewer *[reticulation | trunk]* main in accordance with *[reference design]* if not part of items 22551 or 22552

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) carrying out localised excavations, including all necessary road pavement materials and bound material
- d) supply, assemble, install and remove all shoring equipment required for excavations exceeding 1.5 m
- e) temporary support of other utility authority conduits, cables, pipes where as required
- f) all Intervention planning and community notification requirements to limit impact to Utility Authority customers
- g) cutting pipe components where necessary
- h) all welding and/or jointing as specified in *[reference design]*
- i) temporary surface treatment where required, to facilitate live connection works
- j) prefabricating fitting components where required
- k) cartage of fitting components from the storage site
- l) placing and assembling fitting components
- m) constructing thrust blocks where specified (including reinforcement)
- n) placing, finishing and curing concrete (including reinforcement)
- o) testing by an approved NATA approved authority as per the relevant Utility Authority Code including soil compaction, bacteriological testing, pressure testing and any other testing / decontamination process as required
- p) utilise or dispose of excavated material
- q) supply, place and compact with *[material]* backfill to depth of *[mm]* as specified in *[reference design]*

- r) supply, place and compact with [*material*] backfill to natural surface as specified in [*reference design*]
- s) all work shall be carried out in accordance with the provisions of the contract documents and to the satisfaction of the relevant Utility Authority's representative and the Transport and Main Roads Representative / Administrator, and
- t) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

**Item 22565 Modification / adjustment of existing scour / air valves in accordance with
[Reference Drawings]**

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) carrying out localised excavations, including all necessary road pavement materials and bound material
- d) temporary support of other utility authority conduits, cables, pipes where as required
- e) all works and disposal of contaminated material associate with cutting, dewater (as applicable) and decontaminating scour / air valve and associated sewer main
- f) temporary surface treatment where required, including scour protection at scour valve discharging points
- g) prefabricating fitting components where required
- h) cartage of fitting components from the storage site
- i) placing and assembling fitting components
- j) placing, finishing and curing concrete (including all reinforcement requirements)
- k) cutting pipe components where necessary
- l) installing surface boxes and surface fittings where specified
- m) testing by an approved NATA approved authority as per the relevant Utility Authority Code including soil compaction, bacteriological testing, pressure testing and any other testing as required
- n) utilise or dispose of excavated material
- o) supply, place and compact with [*material*] backfill to depth of [*mm*] as specified in [*reference design*]
- p) supply, place and compact with [*material*] backfill to natural surface as specified in [*reference design*]
- q) all work shall be carried out in accordance with the provisions of the contract documents and to the satisfaction of the relevant Utility Authority's representative and the Transport and Main Roads Representative / Administrator, and
- r) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

2.3.7 Gas Utility network

In addition to the design drawings, all gas relocation works (including material properties) shall be in accordance with the relevant Utility Authority specifications, standards and typical details. The contractor shall ensure all work method statements and inspection hold point documentation is built around the relevant Utility Authority's specifications to ensure that the design intent is met.

Contractor to confirm location of all gas asset prior to undertaking earthworks / auxiliary activities within the works area. Where assets are found to conflict with proposed design, contractor must notify the Administrator immediately advising on location and nature of the conflict.

Contractors to ensure that clearances to electrical infrastructure is maintained during construction in accordance with the relevant Utility Authority requirements to ensure that the proposed works do not impact on existing infrastructure.

Often more than one standard, department and Utility will apply, engineers must reconcile and negotiate standards to ensure overall safety.

Item 22651 Supply [product type] gas pipeline, [transmission | distribution] DN [diameter] mm [pressure rating] in accordance with [reference design] addressing [AS 4645 | AS 2943 | Utility Owner specific standard] requirements

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*, and
- b) supply and delivery of all materials.

Item 22652 Supply, gas [valve type | size] for gas pipeline, [transmission | distribution] in accordance with [reference design] addressing [AS 4645 | AS 2885 | AS 2943 | AS 4853 | Utility Owner specific standard] requirements

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*, and
- b) supply and delivery of all materials.

Item 22653 Supply, install, test and commissioning of other gas fittings / access chamber / or asset [type | size] for gas pipeline, [transmission | distribution] in accordance with [reference design] addressing [AS 4645 | AS 2885 | AS 2943 | AS 4853 | Utility Owner specific standard] requirements

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) carrying out localised excavations, including all necessary road pavement materials and bound material
- d) supply, assemble, install and remove all shoring equipment required for excavations exceeding 1.5 m

- e) utilising or disposing of excavated material
- f) placing and compacting foundation bedding material
- g) placing and compacting backfill material (side zone and overlay zones)
- h) placing Geotextile or equivalent as specified on design drawings
- i) prefabricating materials where required
- j) cartage of materials from the storage site
- k) placing detectable marker tape, hazard board, signage, and so on, as per relevant code
- l) supplying laying and jointing or placing and assembling gas fitting / access chamber components, and so on as specified in [*reference design*]
- m) temporary support of other utility authority conduits, cables, pipes where/as required
- n) cutting pipe components as required
- o) supply, place, finish and cure concrete
- p) supply, place, finish blockwork
- q) performing butt welding, collar welding jointing and all other welding as required for the works
- r) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard, (including soil compaction, pressure testing, concrete testing, and any other testing process as specified), and
- s) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22654 **Install, test and commissioning of [*product type*] gas pipeline, [*transmission | distribution*] DN [*diameter*] mm [*pressure rating*] in accordance with [*reference design*]. Constructed to [*AS 4645 | AS 2885 | Utility Owner specific standard*] (includes all welding / jointing, marker boards, protection tape and posts) (excludes valves)**

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) carrying out localised excavations, including all necessary road pavement materials and bound material
- c) supply, assemble, install and remove all shoring equipment required for excavations exceeding 1.5 m
- d) utilising or disposing of excavated material
- e) placing and compacting foundation bedding material and haunch zone material
- f) prefabricating materials where required
- g) cartage of pipe components from the storage site
- h) installing pipe envelopers as specified on design drawings. This shall include supply, installation and commissioning of plastic spacers, grout annulus between encasing pipe and sewer pipes, waterproofing foam sealants, breather pipes and any other requirements specified in the design

- i) placing detectable marker tape, hazard board, etc above pipe (entire length) as per relevant code
- j) laying and jointing or placing and assembling pipe components including support pads, saddle clamp pipe supports, protection tape as required
- k) temporary support of other utility authority conduits, cables, pipes where/as required
- l) cutting pipe components as required
- m) supply, place, finish and cure concrete, as required
- n) performing butt welding, collar welding jointing and all other welding as required for the works
- o) supply and placing Geotextile or equivalent where required as specified on design drawings
- p) supply, placing and compacting backfill material (side zone and overlay zones)
- q) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard, (including soil compaction, pressure testing, concrete testing, and any other testing process as specified), and
- r) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22655 Install, test and commissioning of gas [valve type | size] for gas pipeline, [transmission | distribution] in accordance with [reference design] addressing [AS 4645 | AS 2885 | Utility Owner specific standard] requirements

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) carrying out localised excavations, including all necessary road pavement materials and bound material
- c) supply, assemble, install and remove all shoring equipment required for excavations exceeding 1.5 m
- d) utilising or disposing of excavated material
- e) supply, place and compact foundation bedding material and haunch zone material
- f) prefabricating materials where required
- g) cartage of valve components from the storage site
- h) placing detectable marker tape, hazard board, signage, etc above pipe (entire length) as per relevant code
- i) laying and jointing or placing and assembling pipe valve including support pads, saddle clamp pipe supports, protection tape, etc as required
- j) temporary support of other utility authority conduits, cables, pipes where/as required
- k) cutting pipe components as required
- l) supply, place, finish and cure concrete, as required
- m) performing butt welding, collar welding jointing and all other welding as required for the works
- n) supply and placing Geotextile or equivalent where required as specified on design drawings

- o) supply, placing and compacting backfill material (side zone and overlay zones)
- p) undertaking all testing and commissioning requirements as per the relevant Utility Authority Code / Standard, (including soil compaction, pressure testing, concrete testing, and any other testing process as specified), and
- q) reinstate landscaping, turf, footpaths, pavements as specified in *[reference design]*.

Item 22656 Live Connection [*high* | *medium* | *low*] pressure [*product type*] DN [*diameter*] mm gas pipeline [*transmission* | *distribution*] (including all valves, fittings and welding)

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) carrying out localised excavations, including all necessary road pavement materials and bound material
- d) supply, assemble, install and remove all shoring equipment required for excavations exceeding 1.5 m
- e) temporary support of other utility authority conduits, cables, pipes where/as required
- f) all Intervention planning and community notification requirements to maintain gas supply to Utility Authority customers
- g) cutting pipe components where necessary
- h) all welding and/or jointing as specified in *[reference design]*
- i) temporary surface treatment where required, to facilitate live connection works
- j) prefabricating fitting components where required
- k) cartage of fitting components from the storage site
- l) placing and assembling fitting components
- m) placing, finishing and curing concrete (including reinforcement)
- n) testing by an approved NATA approved authority as per the relevant Utility Authority Code including soil compaction, pressure testing and any other testing / commissioning process as required
- o) utilise or dispose of excavated material
- p) supply, place and compact with *[material]* backfill to depth of *[mm]* as specified in *[reference design]*
- q) supply, place and compact with *[material]* backfill to natural surface as specified in *[reference design]*
- r) all work shall be carried out in accordance with the provisions of the contract documents and to the satisfaction of the relevant Utility Authority's representative and the Transport and Main Roads Representative / Administrator, and
- s) reinstate landscaping, turf, footpaths, pavements as specified in *[reference design]*.

Item 22657 Treatment of abandoned [type] DN [diameter] mm for gas pipeline left insitu in accordance with [reference design]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) verify with relevant Utility Authority the Transport and Main Roads Representative / Administrator if the gas pipeline is dead and abandoned
- d) verify with the relevant Utility Authority and the Transport and Main Roads Representative / Administrator the extent of the abandoned gas pipeline to be left in situ/ grouted/ plugged
- e) all careful excavation operations to expose the abandoned section of gas pipeline to allow for flowable filling / grouting and/or plugging
- f) temporary support of other utility authority conduits, cables, pipes where/as required
- g) all works associated with the cutting, dewatering and decontamination of the abandoned section of gas pipeline and the removal of cut ends, if ordered. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- h) concrete end plugs (N20/20 – unreinforced concrete) to all abandoned gas pipelines left in place. Concrete ends to be 500 mm minimum thickness and completely seal ends of mains, if ordered
- i) backfill nominated abandoned gas pipeline with flowable fill / grout as detailed in [reference design]
- j) supply, place and compact excavations with [material]
- k) utilise or dispose of excavated materials
- l) all work shall be carried out in accordance with the relevant provisions of the contract documents and to the satisfaction of the relevant Utility Authority's representative and the Transport and Main Roads Representative / Administrator, and
- m) reinstate landscaping, turf, footpaths, pavements as specified in [reference design].

Item 22658 Treatment of abandoned other gas fitting / access chamber / or asset [type | size] for gas pipeline left in-situ in accordance with [reference design]

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) verify with relevant Utility Authority the Transport and Main Roads Representative / Administrator if the gas fitting/access chamber/or asset is dead and abandoned
- d) verify with the relevant Utility Authority and the Transport and Main Roads Representative / Administrator the extent of the abandoned gas fitting / access chamber / or asset to be left insitu / grouted / plugged / backfilled

- e) all careful excavation operations to expose the abandoned section of gas fitting / access chamber / or asset to allow for backfilling and/or plugging
- f) temporary support of other utility authority conduits, cables, pipes where/as required
- g) all works associated with the cutting, dewatering and decontamination of the abandoned gas fitting / access chamber / or asset and the removal of cut or demolished components, if ordered. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- h) concrete end plugs (N20/20 – unreinforced concrete) to all abandoned gas pipelines left in place. Concrete ends to be 500 mm minimum thickness and completely seal ends of mains, if ordered
- i) backfill nominated abandoned gas fitting / access chamber / or asset with [material] as detailed in [reference design]
- j) supply, place and compact excavations with [material]
- k) utilise or dispose of excavated materials
- l) all work shall be carried out in accordance with the relevant provisions of the contract documents and to the satisfaction of the relevant Utility Authority's representative and the Transport and Main Roads Representative / Administrator, and
- m) reinstate landscaping, turf, footpaths, pavements as specified in [reference design].

Item 22659 Removal and disposal of redundant DN [diameter] mm [type | material] gas pipeline [transmission | distribution] in accordance with [reference design] including valves (excluding access chambers)

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) verify with relevant Utility Authority the Transport and Main Roads Representative / Administrator that the gas pipeline is dead and abandoned
- d) verify with the relevant Utility Authority and the Transport and Main Roads Representative / Administrator the extent of abandoned gas pipeline to be removed
- e) carrying out all necessary excavations
- f) temporary support of other utility authority conduits, cables, pipes where/as required
- g) remove identified gas pipeline including any surface / underground fittings, concrete surrounds, surface boxes, location markers, envelopers, valves, pits, etc as relevant. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- h) concrete end plugs (N20/20 – unreinforced concrete) to all abandoned gas pipeline left in place, if ordered. Concrete ends to be 500 mm minimum thickness and completely seal ends of mains
- i) all works and disposal of contaminated material associate with cutting, dewater and decontaminating of abandoned / decommissioned gas pipeline

- j) cutting pipe components as required
- k) utilise or dispose of excavated materials
- l) supply, place and compact with [*material*] backfill to depth of [*mm*] as specified in [*reference design*]
- m) supply, place and compact with [*material*] backfill to natural surface as specified in [*reference design*]
- n) all work shall be carried out in accordance with the provisions of the contract documents and to the satisfaction of the relevant Utility Authority's representative and the Transport and Main Roads Representative / Administrator, and
- o) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

Item 22660 Removal and disposal of other gas fitting / access chamber / or asset [*type* | *size*] for gas pipeline [*transmission* | *distribution*] in accordance with [*reference design*].

Work Operations incorporated in the above include the following as appropriate:

- a) Work Operations listed in Clause 2.1.5 of MRS01 *Introduction to Specifications*
- b) supply of all materials
- c) verify with relevant Utility Authority the Transport and Main Roads Representative / Administrator that the gas fitting / access chamber / or asset is dead and abandoned
- d) verify with the relevant Utility Authority and the Transport and Main Roads Representative / Administrator the extent of abandoned gas fitting / access chamber / or asset to be removed
- e) carrying out all necessary excavations (including shoring as required)
- f) temporary support of other utility authority conduits, cables, pipes where/as required
- g) remove identified gas fitting / access chamber / or asset including any surface/underground fittings, concrete surrounds, surface boxes, location markers, envelopers, valves, pits, etc as relevant. This work is to be carried out in a lawful manner and in accordance with the current legislation for *Workplace Health and Safety Act* and *Environmental Protection Act*
- h) cutting pipe components as required
- i) concrete end plugs (N20/20 – unreinforced concrete) to all abandoned gas pipeline left in place, if ordered. Concrete ends to be 500 mm minimum thickness and completely seal ends of mains
- j) all works and disposal of contaminated material associate with cutting, dewater and decontaminating of abandoned / decommissioned gas fitting / access chamber / or asset
- k) utilise or dispose of excavated materials
- l) supply, place and compact with [*material*] backfill to depth of [*mm*] as specified in [*reference design*]
- m) supply, place and compact with [*material*] backfill to natural surface as specified in [*reference design*]

- n) all work shall be carried out in accordance with the provisions of the contract documents and to the satisfaction of the relevant Utility Authority's representative and the Transport and Main Roads Representative / Administrator, and
- o) reinstate landscaping, turf, footpaths, pavements as specified in [*reference design*].

3 Temporary Support of Utility Assets

The Contractor shall take all necessary precautions to avoid damage to existing and new installations of utility assets whilst carrying out his own work on the Contract. No embankment material containing rock of an average dimension greater than 75 mm, is to be placed over underground utility assets, or in areas where new utility assets are to be laid.

Where the Contractor's work operations necessitate the temporary support or protection of utility assets, the Contractor shall notify the Utility Authority concerned. All such supports and protection shall be carried out with the approval of the impacted Utility Authority.

The cost to the Contractor of temporarily supporting and/or protecting utility assets during work operations shall be deemed to be included in the schedule unit rates and lump sum amounts for the various items of work concerned. No claim for additional payment on this account will be considered.

Where utility assets require protection, the Contractor shall supply the necessary plant, material and labour to carry out the protection, as required by the relevant Utility Authority and will be fully responsible for all works associated with the Works. All works shall require approval from the Utility Authority and the Administrator.

4 Public Utility Authorities fees for representatives on Site

As part of the Principal Contractor's works involving utility assets (utility assets being relocated / protected and adjacent assets impacted by relocation / protection or road works), a representative from the respective gas, electricity and telecommunications Utility Authority may be required on Site for supervision. These Authorities are permitted to charge fees for this service. Water authorities are excluded from being able to stop Transport and Main Roads works on site but may charge fees for a site representative only prior agreement has been included in the contract managing the works involving water assets.

5 Damage and Repair of PUP

The Contractor shall be responsible for any damage to any utility infrastructure (including any completed PUP relocation) caused by the execution of the work under the contract. The Contractor shall notify the Administrator forthwith of any such damage and shall make good any such damage at their cost.

The Contractor shall make arrangements directly with the relevant Utility Authority, for any such repair work and the Contractor shall have no claim against the Principal, for any payment, loss or delay occasioned by any such damage or repair work.

The Contractor shall be responsible for any damage caused to the work under the contract, by any fault that may develop in any utility asset during the contract period, where such fault is caused by a breach, act or omission of the Contractor.

