

Specification (Measurement)

**Transport and Main Roads Specifications
MRS335 Rail Stations**

May 2026

Copyright

© The State of Queensland (Department of Transport and Main Roads) 2026.

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	Work Operations	9
2.2.1	<i>Removal and Demolition</i>	<i>9</i>
2.2.2	<i>Furniture, Fixtures and Fittings.....</i>	<i>12</i>
2.2.3	<i>Signage and Wayfinding – Consolidated.....</i>	<i>18</i>
2.2.4	<i>Signage and Wayfinding – Itemised.....</i>	<i>20</i>
2.2.5	<i>Advertising.....</i>	<i>24</i>
2.2.6	<i>Power</i>	<i>26</i>
2.2.7	<i>Lighting.....</i>	<i>34</i>
2.2.8	<i>Heating, Ventilation and Air Conditioning.....</i>	<i>36</i>
2.2.9	<i>Vertical Transport and Moving Walkways</i>	<i>41</i>
2.2.10	<i>Platform Screen Doors.....</i>	<i>48</i>
2.2.11	<i>Mechanical Platform Gap Fillers</i>	<i>51</i>
2.2.12	<i>Hydraulics.....</i>	<i>53</i>
2.2.13	<i>IT Network Infrastructure and Building Management Systems</i>	<i>55</i>
2.2.14	<i>Fire Services</i>	<i>60</i>
2.2.15	<i>Ticketing and Fare Gates.....</i>	<i>69</i>
2.2.16	<i>Customer Information and Communication</i>	<i>77</i>
2.2.17	<i>Security</i>	<i>90</i>
2.2.18	<i>Stations Miscellaneous</i>	<i>97</i>
2.3	Measurement	99
2.3.1	<i>Measurement of station components</i>	<i>99</i>
2.3.2	<i>Measurement of signage and wayfinding</i>	<i>99</i>
2.3.3	<i>Measurement of fire services</i>	<i>100</i>
2.3.4	<i>Measurement of testing and commissioning of stations</i>	<i>100</i>
2.3.5	<i>Unloading, handling, and temporary storage on Site.....</i>	<i>100</i>
2.4	Calculation of quantities.....	101
2.4.1	<i>General</i>	<i>101</i>
2.4.2	<i>Supply only</i>	<i>101</i>
2.4	Removal of existing equipment.....	101
2.5	Station materials supplied by the Principal	101
2.5.1	<i>Supply of station materials</i>	<i>101</i>
2.5.2	<i>Supply location.....</i>	<i>101</i>
2.5.3	<i>Time of delivery.....</i>	<i>101</i>
2.5.4	<i>Acceptance of station materials by the Contractor.....</i>	<i>102</i>
2.5.5	<i>Damage to station materials.....</i>	<i>102</i>

1 Introduction

This Specification applies to rail stations.

This Specification shall be read in conjunction with MRS01 *Introduction to Specifications* and other Specifications as appropriate.

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
Demolition or Removal		
81351	Demolition or removal of structures, [description]	lump sum
81352	Demolition or removal of building services and systems, [description]	lump sum
81353	Removal of furniture, fixtures and fittings, [description]	lump sum
81354	Site clearance, [description]	lump sum
Furniture, Fixtures and Fittings		
81361	Supply of bicycle rack, [description]	each
81362	Supply of boarding ramp, [description]	each
81363	Supply of boarding ramp cabinet, [description]	each
81364	Supply of customer service window module, [description]	each
81365	Supply of handrails, [description]	m
81366	Supply of passenger bench seat, [standard half small], [description]	each
81367	Supply of public bin, [standard blast], [description]	each
81368	Installation of bicycle rack, [description]	each
81369	Installation of boarding ramp, [description]	each
81370	Installation of boarding ramp cabinet, [description]	each
81371	Installation of customer service window module, [description]	each

Standard Item No.	Description	Unit of Measurement
81372	Installation of handrails, <i>[description]</i>	m
81373	Installation of passenger bench seat <i>[standard half small]</i> , <i>[description]</i>	each
81374	Installation of public bin, <i>[standard blast]</i> , <i>[description]</i>	each
81375	Supply and installation of bicycle rack, <i>[description]</i>	each
81376	Supply and installation of boarding ramp, <i>[description]</i>	each
81377	Supply and installation of boarding ramp cabinet, <i>[description]</i>	each
81378	Supply and installation of customer service window module, <i>[description]</i>	each
81379	Supply and installation of handrails, <i>[description]</i>	m
81380	Supply and installation of passenger bench seat <i>[standard half small]</i> , <i>[description]</i>	each
81381	Supply and installation of public bin, <i>[standard blast]</i> , <i>[description]</i>	each
Signage and Wayfinding – Consolidated		
81401	Supply of Directional Signage, <i>[description]</i>	lump sum
81402	Supply of Facility Identification and Regulatory Information Signage, <i>[description]</i>	lump sum
81403	Installation of Directional Signage, <i>[description]</i>	lump sum
81404	Installation of Facility Identification and Regulatory Information Signage, <i>[description]</i>	lump sum
81405	Supply and installation of Directional Signage, <i>[description]</i>	lump sum
81406	Supply and installation of Facility Identification and Regulatory Information Signage, <i>[description]</i>	lump sum
Signage and Wayfinding – Itemised		
81416	Supply of Directional Signage, <i>[sign type]</i> , <i>[description]</i>	each
81417	Supply of Facility Identification and Regulatory Information Signage, <i>[sign type]</i> , <i>[description]</i>	each
81418	Supply of Information Systems Signage, <i>[sign type]</i> , <i>[illuminated non-illuminated]</i> , <i>[description]</i>	each
81419	Supply of Primary Identification Signage, <i>[sign type]</i> , <i>[illuminated non-illuminated]</i> , <i>[description]</i>	each
81420	Installation of Directional Signage, <i>[sign type]</i> , <i>[description]</i>	each

Standard Item No.	Description	Unit of Measurement
81421	Installation of Facility Identification and Regulatory Information Signage, <i>[sign type]</i> , <i>[description]</i>	each
81422	Installation of Information Systems Signage, <i>[sign type]</i> , <i>[illuminated non-illuminated]</i> , <i>[description]</i>	each
81423	Installation of Primary Identification Signage, <i>[sign type]</i> , <i>[illuminated non-illuminated]</i> , <i>[description]</i>	each
81424	Supply and installation of Directional Signage, <i>[sign type]</i> , <i>[description]</i>	each
81425	Supply and installation of Facility Identification and Regulatory Information Signage, <i>[sign type]</i> , <i>[description]</i>	each
81426	Supply and installation of Information Systems Signage, <i>[sign type]</i> , <i>[illuminated non-illuminated]</i> , <i>[description]</i>	each
81427	Supply and installation of Primary Identification Signage, <i>[sign type]</i> , <i>[illuminated non-illuminated]</i> , <i>[description]</i>	each
Advertising		
81441	Supply of Advertising <i>[static digital]</i> , <i>[description]</i>	each
81442	Installation of Advertising <i>[static digital]</i> , <i>[description]</i>	each
81443	Supply and installation of Advertising <i>[static digital]</i> , <i>[description]</i>	each
Power		
81451	Supply of High Voltage (HV) Power systems, <i>[description]</i>	lump sum
81452	Supply of Low Voltage (LV) Power systems, <i>[description]</i>	lump sum
81453	Supply of Solar Photovoltaic (PV) Power systems, <i>[description]</i>	lump sum
81454	Supply of Uninterruptible Power Supply (UPS) systems, <i>[description]</i>	lump sum
81455	Supply of Isolation Transformers, <i>[description]</i>	lump sum
81456	Installation of High Voltage (HV) Power systems, <i>[description]</i>	lump sum
81457	Installation of Low Voltage (LV) Power systems, <i>[description]</i>	lump sum
81458	Installation of Solar Photovoltaic (PV) Power systems, <i>[description]</i>	lump sum
81459	Installation of Uninterruptible Power Supply (UPS) systems, <i>[description]</i>	lump sum
81460	Installation of Isolation Transformers, <i>[description]</i>	lump sum

Standard Item No.	Description	Unit of Measurement
81461	Supply and installation of High Voltage (HV) Power systems, [description]	lump sum
81462	Supply and installation of Low Voltage (LV) Power systems, [description]	lump sum
81463	Supply and installation of Solar Photovoltaic (PV) Power systems, [description]	lump sum
81464	Supply and installation of Uninterruptible Power Supply (UPS) systems, [description]	lump sum
81465	Supply and installation of Isolation Transformers, [description]	lump sum
81466	Connection to High Voltage (HV) Supply, [description]	lump sum
Lighting		
81481	Supply of Station Lighting systems, [description]	lump sum
81482	Installation of Station Lighting systems, [description]	lump sum
81483	Supply and installation of Lighting systems, [description]	lump sum
Heating, Ventilation and Air Conditioning		
81491	Supply of Mechanical Ventilation systems, [description]	each
81492	Supply of Exhaust systems [over track exhaust under platform exhaust], [description]	lump sum
81493	Supply of Air Conditioning systems, [description]	lump sum
81494	Installation of Mechanical Ventilation systems, [description]	each
81495	Installation of Exhaust systems [over track exhaust under platform exhaust], [description]	lump sum
81496	Installation of Air Conditioning systems, [description]	lump sum
81497	Supply and installation of Mechanical Ventilation systems, [description]	each
81498	Supply and installation of Exhaust systems [over track exhaust under platform exhaust], [description]	lump sum
81499	Supply and installation of Air Conditioning systems, [description]	lump sum
Vertical Transport and Moving Walkways		
81511	Supply of Lifts, [description]	each
81512	Supply of Escalators, [description]	each
81513	Supply of Stairlifts, [description]	each
81514	Supply of Moving Walkways, [description]	each

Standard Item No.	Description	Unit of Measurement
81515	Installation of Lifts, [<i>description</i>]	each
81516	Installation of Escalators, [<i>description</i>]	each
81517	Installation of Stairlifts, [<i>description</i>]	each
81518	Installation of Moving Walkways, [<i>description</i>]	each
81519	Supply and installation of Lifts, [<i>description</i>]	each
81520	Supply and installation of Escalators, [<i>description</i>]	each
81521	Supply and installation of Stairlifts, [<i>description</i>]	each
81522	Supply and installation of Moving Walkways, [<i>description</i>]	each
Platform Screen Doors		
81531	Supply of Platform Screen Door systems, [<i>description</i>]	each
81532	Installation of Platform Screen Door systems, [<i>description</i>]	each
81533	Supply and installation of Platform Screen Door systems, [<i>description</i>]	each
Mechanical Platform Gap Fillers		
81541	Supply of Mechanical Platform Gap Filler systems, [<i>description</i>]	each
81542	Installation of Mechanical Platform Gap Filler systems, [<i>description</i>]	each
81543	Supply and installation of Mechanical Platform Gap Filler systems, [<i>description</i>]	each
Hydraulics		
81551	Supply of Hydraulic systems [<i>potable</i> <i>non-potable</i>], [<i>description</i>]	lump sum
81552	Installation of Hydraulic systems [<i>potable</i> <i>non-potable</i>], [<i>description</i>]	lump sum
81553	Supply and installation of Hydraulic systems [<i>potable</i> <i>non-potable</i>], [<i>description</i>]	lump sum
81554	Connection to Water Mains supply, [<i>description</i>]	lump sum
81555	Connection to Stormwater discharge, [<i>description</i>]	lump sum
81556	Connection to Sewer discharge, [<i>description</i>]	lump sum
IT Network Infrastructure and Building Management		
81566	Supply of IT Network Infrastructure, [<i>description</i>]	lump sum
81567	Supply of Public Wi-Fi systems, [<i>description</i>]	lump sum
81568	Supply of Building Management Systems, [<i>description</i>]	lump sum

Standard Item No.	Description	Unit of Measurement
81569	Installation of IT Network Infrastructure, [description]	lump sum
81570	Installation of Public Wi-Fi systems, [description]	lump sum
81571	Installation of Building Management Systems, [description]	lump sum
81572	Supply and installation of IT Network Infrastructure, [description]	lump sum
81573	Supply and installation of Public Wi-Fi systems, [description]	lump sum
81574	Supply and installation of Building Management Systems, [description]	lump sum
Fire Services		
81586	Supply of Fire Detection and Alarm Systems [open station enclosed station underground station], [description]	lump sum
81587	Supply of Fire Hydrant Systems [open station enclosed station underground station], [description]	lump sum
81588	Supply of Fire Water Tanks, [description]	lump sum
81589	Supply of Automatic Sprinkler Systems [open station enclosed station underground station], [description]	lump sum
81590	Supply of Fire Hose Reels, [description]	each
81591	Supply of Gaseous Fire Suppression systems, [description]	each
81592	Installation of Fire Detection and Alarm Systems [open station enclosed station underground station], [description]	lump sum
81593	Installation of Fire Hydrant Systems [open station enclosed station underground station], [description]	lump sum
81594	Installation of Fire Water Tanks, [description]	lump sum
81595	Installation of Automatic Sprinkler Systems [open station enclosed station underground station], [description]	lump sum
81596	Installation of Fire Hose Reels, [description]	each
81597	Installation of Gaseous Fire Suppression systems, [description]	each
81598	Supply and installation of Fire Detection and Alarm Systems [open station enclosed station underground station], [description]	lump sum
81599	Supply and installation of Fire Hydrant Systems [open station enclosed station underground station], [description]	lump sum
81600	Supply and installation of Fire Water Tanks, [description]	lump sum
81601	Supply and installation of Automatic Sprinkler Systems [open station enclosed station underground station], [description]	lump sum

Standard Item No.	Description	Unit of Measurement
81602	Supply and installation of Fire Hose Reels, <i>[description]</i>	each
81603	Supply and installation of Gaseous Fire Suppression systems, <i>[description]</i>	each
Ticketing and Fare Gates		
81621	Supply of Fare Gates <i>[standard access gates wide access gates]</i> , <i>[description]</i>	each
81622	Supply of Platform Validators, <i>[description]</i>	each
81623	Supply of Add Value Vending Machines (AVVMs), <i>[description]</i>	each
81624	Supply of Ticket Office Terminal (TOT), <i>[description]</i>	each
81625	Supply of Station Office Computer (SOC), <i>[description]</i>	each
81626	Installation of Fare Gates <i>[standard access gates wide access gates]</i> , <i>[description]</i>	each
81627	Installation of Platform Validators, <i>[description]</i>	each
81628	Installation of Add Value Vending Machines (AVVMs), <i>[description]</i>	each
81629	Installation of Ticket Office Terminal (TOT), <i>[description]</i>	each
81630	Installation of Station Office Computer (SOC), <i>[description]</i>	each
81631	Supply and installation of Fare Gates <i>[standard access gates wide access gates]</i> , <i>[description]</i>	each
81632	Supply and installation of Platform Validators, <i>[description]</i>	each
81633	Supply and installation of Add Value Vending Machines (AVVMs), <i>[description]</i>	each
81634	Supply and installation of Ticket Office Terminal (TOT), <i>[description]</i>	each
81635	Supply and installation of Station Office Computer (SOC), <i>[description]</i>	each
Customer Information and Communication		
81651	Supply of Next Train Information (NTI) units <i>[wall mount pedestal mount]</i> , <i>[description]</i>	each
81652	Supply of Emergency and Disability Assistance Phone (EDAP) units <i>[wall mount pedestal mount]</i> , <i>[description]</i>	each
81653	Supply of Next Train Information (NTI) / Emergency and Disability Assistance Phone (EDAP) combined units <i>[wall mount pedestal mount]</i> , <i>[description]</i>	each

Standard Item No.	Description	Unit of Measurement
81654	Supply of Customer Information Screens (CIS), [description]	each
81655	Supply of Public Address (PA) system, [description]	each
81656	Supply of Hearing Augmentation Loop (HAL) system, [description]	each
81657	Supply of Auracast system, [description]	each
81658	Installation of Next Train Information (NTI) units [wall mount pedestal mount], [description]	each
81659	Installation of Emergency and Disability Assistance Phone (EDAP) units [wall mount pedestal mount], [description]	each
81660	Installation of Next Train Information (NTI) / Emergency and Disability Assistance Phone (EDAP) combined units [wall mount pedestal mount], [description]	each
81661	Installation of Customer Information Screens (CIS), [description]	each
81662	Installation of Public Address (PA) system, [description]	each
81663	Installation of Hearing Augmentation Loop (HAL) system, [description]	each
81664	Installation of Auracast system, [description]	each
81665	Supply and installation of Next Train Information (NTI) units [wall mount pedestal mount], [description]	each
81666	Supply and installation of Emergency and Disability Assistance Phone (EDAP) units [wall mount pedestal mount], [description]	each
81667	Supply and installation of Next Train Information (NTI) / Emergency and Disability Assistance Phone (EDAP) combined units [wall mount pedestal mount], [description]	each
81668	Supply and installation of Customer Information Screens (CIS), [description]	each
81669	Supply and installation of Public Address (PA) system, [description]	each
81670	Supply and installation of Hearing Augmentation Loop (HAL) system, [description]	each
81671	Supply and installation of Auracast system, [description]	each
Security		
81686	Supply of CCTV systems, [description]	lump sum
81687	Supply of Electronic Access Control systems, [description]	lump sum

Standard Item No.	Description	Unit of Measurement
81688	Supply of Alarm systems, [description]	lump sum
81689	Supply of Duress Buttons, [description]	each
81690	Installation of CCTV systems, [description]	lump sum
81691	Installation of Electronic Access Control systems, [description]	lump sum
81692	Installation of Alarm systems, [description]	lump sum
81693	Installation of Duress Buttons, [description]	each
81694	Supply and installation of CCTV systems, [description]	lump sum
81695	Supply and installation of Electronic Access Control systems, [description]	lump sum
81696	Supply and installation of Alarm systems, [description]	lump sum
81697	Supply and installation of Duress Buttons, [description]	each
Stations Miscellaneous		
81711	Testing and commissioning of stations, [description]	lump sum
81712	Supply of Static Platform Gap Fillers, [description]	each
81713	Installation of Static Platform Gap Fillers, [description]	each
81714	Supply and installation of Static Platform Gap Fillers, [description]	each

2.2 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.

2.2.1 Removal and Demolition

Item 81351 Demolition or removal of structures, [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) demolition or removal of structures, including but not limited to:
 - i. station buildings, platforms and ancillary structures
 - ii. canopies, shelters, and awnings
 - iii. pedestrian bridges and underpasses
 - iv. foundations, structural supports and retaining walls

- v. pavements, hardstands, and surface treatments, and
 - vi. fencing and barriers.
- c) transporting, unloading, and stockpiling of materials for re-use at a later stage, where necessary
- d) transport of materials selected for salvage to the nominated storage Site
- e) removing from Site and disposing of all surplus materials
- f) utilising or disposing of excavated and removed or demolished materials, and
- g) where Asbestos Containing Material (ACM) or Naturally Occurring Asbestos (NOA) is identified, suspected, or encountered during the Works, all activities must be carried out in strict accordance with the MRS96 *Management and Removal of Asbestos* and applicable WHS legislation. The Contractor is responsible for the safe identification, management, removal, handling, transport, and disposal of asbestos and asbestos containing materials encountered during the Works.

Item 81352 Demolition or removal of building services and systems, [*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) de-energisation, de-pressurisation and disconnection of services, where necessary
- c) removal of building services and systems, including but not limited to:
 - i. power systems including high voltage systems, low voltage systems, solar systems, uninterruptible power supplies, and isolation transformers
 - ii. lighting systems
 - iii. HVAC systems including mechanical ventilation, exhaust systems, and air conditioning
 - iv. vertical transport systems including lifts, escalators, stairlifts, and moving walkways
 - v. platform screen door systems and mechanical platform gap fillers
 - vi. hydraulic systems including potable and non-potable water supply, and drainage
 - vii. network infrastructure, public Wi-Fi, and building management systems
 - viii. fire services including fire detection and alarm systems, and fire suppression systems

- ix. ticketing systems and fare gates
 - x. customer information and communication systems, and
 - xi. security systems including CCTV, electronic access control, and alarm systems.
- d) transporting, unloading, and stockpiling of materials for re-use at a later stage, where necessary
- e) transport of materials selected for salvage to the nominated storage Site
- f) removing from Site and disposing of all surplus materials
- g) utilising or disposing of excavated and removed or demolished materials, and
- h) where Asbestos Containing Material (ACM) or Naturally Occurring Asbestos (NOA) is identified, suspected, or encountered during the Works, all activities must be carried out in strict accordance with the MRS96 *Management and Removal of Asbestos* and applicable WHS legislation. The Contractor is responsible for the safe identification, management, removal, handling, transport, and disposal of asbestos and asbestos containing materials encountered during the Works.

Item 81353 Removal of furniture, fixtures and fittings, [*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) removal of furniture, fixtures and fittings, including but not limited to:
 - i. station furniture including seating, shelters, and bins
 - ii. handrails, balustrades, and screens
 - iii. doors, windows, and glazing
 - iv. signage and wayfinding
 - v. floor, wall, and ceiling finishes, and
 - vi. architectural fixtures and fittings.
- c) transporting, unloading, and stockpiling of materials for re-use at a later stage, where necessary
- d) transport of materials selected for salvage to the nominated storage Site

- e) removing from Site and disposing of all surplus materials, and
- f) where Asbestos Containing Material (ACM) or Naturally Occurring Asbestos (NOA) is identified, suspected, or encountered during the Works, all activities must be carried out in strict accordance with the MRS96 *Management and Removal of Asbestos* and applicable WHS legislation. The Contractor is responsible for the safe identification, management, removal, handling, transport, and disposal of asbestos and asbestos containing materials encountered during the Works.

Item 81354 Site clearance, [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) site clearance, including but not limited to:
 - i. removal of vegetation
 - ii. removal of redundant services and infrastructure, and
 - iii. site remediation and make-good works.
- c) removing from Site and disposing of all surplus materials
- d) utilising or disposing of excavated and removed or demolished materials
- e) backfill and reinstatement of disturbed areas, and
- f) where Asbestos Containing Material (ACM) or Naturally Occurring Asbestos (NOA) is identified, suspected, or encountered during the Works, all activities must be carried out in strict accordance with the MRS96 *Management and Removal of Asbestos* and applicable WHS legislation. The Contractor is responsible for the safe identification, management, removal, handling, transport, and disposal of asbestos and asbestos containing materials encountered during the Works.

2.2.2 Furniture, Fixtures and Fittings

Item 81361 Supply of bicycle rack, [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 bicycle rack, including mounting structures, brackets, and fixings, and
- c) handling, transport to the Site, and storage on the Site.

Item 81362 Supply of boarding ramp, [*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 boarding ramp, including ramp deck, non-slip surface treatment, edge protection and carry handles, and
- c) handling, transport to the Site, and storage on the Site.

Item 81363 Supply of boarding ramp cabinet, [*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 boarding ramp cabinet, including lock, rubber protection piece, buckle and strap, and other necessary fixtures and fittings, and
- c) handling, transport to the Site, and storage on the Site.

Item 81364 Supply of customer service window module, [*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 customer service window module, including but not limited to:
 - i. module framing, cladding, acoustic louvres, benchtop counter, roller shutter, grabrail, window suit framing, glass panel, and security film, and
 - ii. mounting structures, brackets, and fixings.
- c) handling, transport to the Site, and storage on the Site.

Item 81365 Supply of handrails, [*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 handrails, including but not limited to:
 - i. handrail ends and changes in direction, and
 - ii. mounting structures, brackets, and fixings.
- c) handling, transport to the Site, and storage on the Site.

Item 81366 Supply of passenger bench seat [*standard* | *half* | *small*], [*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 passenger bench seat, including but not limited to:
 - i. stainless steel tube frame
 - ii. perforated corrugated profile seat, and
 - iii. mounting structures, brackets, and fixings.
- c) handling, transport to the Site, and storage on the Site.

Item 81367 Supply of public bin [*standard* | *blast*], [*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 bins, including but not limited to:
 - i. bin body
 - ii. signage and labelling, and
 - iii. mounting structures, brackets, and fixings.
- c) handling, transport to the Site, and storage on the Site.

Item 81368 Installation of bicycle rack, [*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) installation of bicycle rack, including mounting structures, brackets, and fixings, and
- c) rehandling and transport on the Site, where necessary.

Item 81369 Installation of boarding ramp, [*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) installation of boarding ramp, including ramp deck, non-slip surface treatment, edge protection and carry handles, and
- c) rehandling and transport on the Site, where necessary.

Item 81370 Installation of boarding ramp cabinet, [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) installation of boarding ramp cabinet, including lock, rubber protection piece, buckle and strap, and other necessary fixtures and fittings, and
- c) rehandling and transport on the Site, where necessary.

Item 81371 Installation of customer service window module, [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) installation of customer service window module, including but not limited to:
 - i. module framing, cladding, acoustic louvres, benchtop counter, roller shutter, grabrail, window suit framing, glass panel, and security film, and
 - ii. mounting structures, brackets, and fixings.
- c) rehandling and transport on the Site, where necessary.

Item 81372 Installation of handrails, [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) installation of handrails, including but not limited to:
 - i. handrail ends and changes in direction, and
 - ii. mounting structures, brackets, and fixings.
- c) rehandling and transport on the Site, where necessary.

Item 81373 Installation of passenger bench seat [standard | half | small], [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) installation of passenger bench seat, including but not limited to:
 - i. stainless steel tube frame

- ii. perforated corrugated profile seat, and
 - iii. mounting structures, brackets, and fixings.
- c) rehandling and transport on the Site, where necessary.

Item 81374 Installation of public bin [*standard* | *blast*], [*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) installation of bins, including but not limited to:
 - i. bin body
 - ii. signage and labelling, and
 - iii. mounting structures, brackets, and fixings.
- c) rehandling and transport on the Site, where necessary.

Item 81375 Supply and installation of bicycle rack, [*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 and installation of bicycle rack, including mounting structures, brackets, and fixings
- c) handling, transport to the Site, and storage on the Site, and
- d) rehandling and transport on the Site, where necessary.

Item 81376 Supply and installation of boarding ramp, [*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 and installation of boarding ramp, including ramp deck, non-slip surface treatment, edge protection and carry handles
- c) handling, transport to the Site, and storage on the Site, and
- d) rehandling and transport on the Site, where necessary.

Item 81377 Supply and installation of boarding ramp cabinet, [*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 and installation of boarding ramp cabinet, including lock, rubber protection piece, buckle and strap, and other necessary fixtures and fittings
- c) handling, transport to the Site, and storage on the Site, and
- d) rehandling and transport on the Site, where necessary.

Item 81378 Supply and installation of customer service window module, [*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 and installation of customer service window module, including but not limited to:
 - i. module framing, cladding, acoustic louvres, benchtop counter, roller shutter, grabrail, window suit framing, glass panel, and security film, and
 - ii. mounting structures, brackets, and fixings.
- c) handling, transport to the Site, and storage on the Site, and
- d) rehandling and transport on the Site, where necessary.

Item 81379 Supply and installation of handrails, [*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 and installation of handrails, including but not limited to:
 - i. handrail ends and changes in direction, and
 - ii. mounting structures, brackets, and fixings.
- c) handling, transport to the Site, and storage on the Site, and
- d) rehandling and transport on the Site, where necessary.

Item 81380 Supply and installation of passenger bench seat [*standard* | *half* | *small*], [*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 and installation of passenger bench seat, including but not limited to:
 - i. stainless steel tube frame

- ii. perforated corrugated profile seat, and
- iii. mounting structures, brackets, and fixings.
- c) handling, transport to the Site, and storage on the Site, and
- d) rehandling and transport on the Site, where necessary.

Item 81381 Supply and installation of public bin [*standard* | *blast*], [*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 and installation of bins, including but not limited to:
 - i. bin body
 - ii. signage and labelling, and
 - iii. mounting structures, brackets, and fixings.
- c) handling, transport to the Site, and storage on the Site, and
- d) rehandling and transport on the Site, where necessary.

2.2.3 Signage and Wayfinding – Consolidated

Item 81401 Supply of Directional Signage, [*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 directional signage, including but not limited to mounting structures, brackets, and fixings, and
- c) handling, transport to the Site, and storage on the Site.

Item 81402 Supply of Facility Identification and Regulatory Information Signage, [*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 facility identification and regulatory information signage, including but not limited to mounting structures, brackets, and fixings, and
- c) handling, transport to the Site, and storage on the Site.

Item 81403 Installation of Directional Signage, [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) installation of directional signage, including but not limited to mounting structures, brackets, and fixings
- c) installation and mounting of signage to walls, ceilings and structures
- d) inspection and verification, and
- e) rehandling and transport on the Site, where necessary.

Item 81404 Installation of Facility Identification and Regulatory Information Signage, [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) installation of facility identification and regulatory information signage, including but not limited to mounting structures, brackets, and fixings
- c) installation and mounting of signage to walls, ceilings and structures
- d) inspection and verification, and
- e) rehandling and transport on the Site, where necessary.

Item 81405 Supply and installation of Directional Signage, [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 and installation of directional signage, including but not limited to mounting structures, brackets, and fixings
- c) installation and mounting of signage to walls, ceilings and structures
- d) inspection and verification
- e) handling, transport to the Site, and storage on the Site, and
- f) rehandling and transport on the Site, where necessary.

Item 81406 Supply and installation of Facility Identification and Regulatory Information Signage, [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 and installation of facility identification and regulatory information signage, including but not limited to mounting structures, brackets, and fixings
- c) installation and mounting of signage to walls, ceilings and structures
- d) inspection and verification
- e) handling, transport to the Site, and storage on the Site, and
- f) rehandling and transport on the Site, where necessary.

2.2.4 Signage and Wayfinding – Itemised

Item 81416 Supply of Directional Signage, [sign type], [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 directional signage, including but not limited to mounting structures, brackets, and fixings, and
- c) handling, transport to the Site, and storage on the Site.

Item 81417 Supply of Facility Identification and Regulatory Information Signage, [sign type], [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 facility identification and regulatory information signage, including but not limited to mounting structures, brackets, and fixings, and
- c) handling, transport to the Site, and storage on the Site.

Item 81418 Supply of Information System Signage, [sign type], [illuminated | non-illuminated], [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 information system signage, including but not limited to:
 - i. power supply equipment including connections, isolators, and circuit protection, where applicable
 - ii. power cables, cable containment, and reticulation, where applicable, and
 - iii. mounting structures, brackets, and fixings.
- c) handling, transport to the Site, and storage on the Site.

Item 81419 Supply of Primary Identification Signage, [sign type], [illuminated | non-illuminated], [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 primary identification signage, including but not limited to:
 - i. power supply equipment including connections, isolators, and circuit protection, where applicable
 - ii. power cables, cable containment, and reticulation, where applicable, and
 - iii. mounting structures, brackets, and fixings.
- c) handling, transport to the Site, and storage on the Site.

Item 81420 Installation of Directional Signage, [sign type], [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) installation of directional signage, including but not limited to mounting structures, brackets, and fixings
- c) installation and mounting of signage to walls, ceilings and structures
- d) inspection and verification, and
- e) rehandling and transport on the Site, where necessary.

Item 81421 Installation of Facility Identification and Regulatory Information Signage, [*sign type*], [*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) installation of facility identification and regulatory information signage, including but not limited to mounting structures, brackets, and fixings
- c) installation and mounting of signage to walls, ceilings and structures
- d) inspection and verification, and
- e) rehandling and transport on the Site, where necessary.

Item 81422 Installation of Information System Signage, [*sign type*], [*illuminated* | *non-illuminated*], [*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) installation of information system signage, including but not limited to:
 - i. power supply equipment including connections, isolators, and circuit protection, where applicable
 - ii. power cables, cable containment, and reticulation, where applicable, and
 - iii. mounting structures, brackets, and fixings.
- c) installation and mounting of signage to walls, ceilings and structures
- d) running, terminating and testing of power cables and illumination, where applicable
- e) inspection and verification, and
- f) rehandling and transport on the Site, where necessary.

Item 81423 Installation of Primary Identification Signage, [*sign type*], [*illuminated* | *non-illuminated*], [*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) installation of primary identification signage, including but not limited to:
 - i. power supply equipment including connections, isolators, and circuit protection, where applicable

- ii. power cables, cable containment, and reticulation, where applicable, and
 - iii. mounting structures, brackets, and fixings.
- c) installation and mounting of signage to walls, ceilings and structures
 - d) running, terminating and testing of power cables and illumination, where applicable
 - e) inspection and verification, and
 - f) rehandling and transport on the Site, where necessary.

Item 81424 Supply and installation of Directional Signage, [*sign type*], [*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 and installation of directional signage, including but not limited to mounting structures, brackets, and fixings
- c) installation and mounting of signage to walls, ceilings and structures
- d) inspection and verification
- e) handling, transport to the Site, and storage on the Site, and
- f) rehandling and transport on the Site, where necessary.

Item 81425 Supply and installation of Facility Identification and Regulatory Information Signage, [*sign type*], [*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 and installation of facility identification and regulatory information signage, including but not limited to mounting structures, brackets, and fixings
- c) installation and mounting of signage to walls, ceilings and structures
- d) inspection and verification
- e) handling, transport to the Site, and storage on the Site, and
- f) rehandling and transport on the Site, where necessary.

Item 81426 Supply and installation of Information System Signage, [*sign type*], [*illuminated* | *non-illuminated*], [*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 and installation of information system signage, including but not limited to:
 - i. power supply equipment including connections, isolators, and circuit protection, where applicable
 - ii. power cables, cable containment, and reticulation, where applicable, and
 - iii. mounting structures, brackets, and fixings.
- c) installation and mounting of signage to walls, ceilings and structures
- d) running, terminating and testing of power cables and illumination, where applicable
- e) inspection and verification
- f) handling, transport to the Site, and storage on the Site, and
- g) rehandling and transport on the Site, where necessary.

Item 81427 Supply and installation of Primary Identification Signage, [*sign type*], [*illuminated* | *non-illuminated*], [*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 and installation of primary identification signage, including but not limited to:
 - i. power supply equipment including connections, isolators, and circuit protection, where applicable
 - ii. power cables, cable containment, and reticulation, where applicable, and
 - iii. mounting structures, brackets, and fixings.
- c) installation and mounting of signage to walls, ceilings and structures
- d) running, terminating and testing of power cables and illumination, where applicable
- e) inspection and verification
- f) handling, transport to the Site, and storage on the Site, and
- g) rehandling and transport on the Site, where necessary.

2.2.5 Advertising

Item 81441 Supply of Advertising [*static* | *digital*], [*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 advertising, including but not limited to:
 - i. static advertising panels, billboards and posters, where applicable
 - ii. digital displays and associated control equipment, where applicable
 - iii. power supply equipment including connections, isolators, and circuit protection, where applicable
 - iv. control and power cables, cable containment, and reticulation, where applicable, and
 - v. mounting structures, brackets, and fixings.
- c) handling, transport to the Site, and storage on the Site.

Item 81442 Installation of Advertising [*static* | *digital*], [*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) installation of advertising, including but not limited to:
 - i. static advertising panels, billboards and posters, where applicable
 - ii. digital displays and associated control equipment, where applicable
 - iii. power supply equipment including connections, isolators, and circuit protection, where applicable
 - iv. control and power cables, cable containment, and reticulation, where applicable, and
 - v. mounting structures, brackets, and fixings.
- c) installation and mounting of advertising panels, displays, and structures
- d) running, terminating and testing of control and power cables, where applicable
- e) configuration and commissioning of digital displays, where applicable
- f) inspection and verification, and
- g) rehandling and transport on the Site, where necessary.

Item 81443 Supply and installation of Advertising [*static* | *digital*], [*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 and installation of advertising, including but not limited to:
 - i. static advertising panels, billboards and posters, where applicable
 - ii. digital displays and associated control equipment, where applicable
 - iii. power supply equipment including connections, isolators, and circuit protection, where applicable
 - iv. control and power cables, cable containment, and reticulation, where applicable, and
 - v. mounting structures, brackets, and fixings.
- c) installation and mounting of advertising panels, displays, and structures
- d) running, terminating and testing of control and power cables, where applicable
- e) configuration and commissioning of digital displays, where applicable
- f) inspection and verification
- g) handling, transport to the Site, and storage on the Site, and
- h) rehandling and transport on the Site, where necessary.

2.2.6 Power

Item 81451 Supply of High Voltage (HV) Power systems, [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 high voltage power systems, including but not limited to:
 - i. transformers, switchgear and distribution equipment
 - ii. metering and monitoring equipment
 - iii. control and protection systems
 - iv. cables, cable containment, and reticulation
 - v. earthing and bonding systems, and
 - vi. equipment structures, enclosures, frames, brackets and fixings.
- c) handling, transport to the Site, and storage on the Site.

Item 81452 Supply of Low Voltage (LV) Power systems, [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 low voltage power systems, including but not limited to:
 - i. switchboards, distribution boards and distribution equipment
 - ii. metering and monitoring equipment
 - iii. control and protection systems
 - iv. power outlets and wall sockets
 - v. cables, cable containment, and reticulation
 - vi. earthing and bonding systems, and
 - vii. equipment racks, enclosures, frames, brackets and fixings.
- c) handling, transport to the Site, and storage on the Site.

Item 81453 Supply of Solar Photovoltaic (PV) Power systems, [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 solar photovoltaic power systems, including but not limited to:
 - i. solar panels
 - ii. inverters and power conversion equipment
 - iii. metering and monitoring equipment
 - iv. control and protection systems
 - v. cables, cable containment, and reticulation
 - vi. earthing and bonding systems, and
 - vii. equipment racks, enclosures, frames, brackets and fixings.
- c) handling, transport to the Site, and storage on the Site.

Item 81454 Supply of Uninterruptible Power Supply (UPS) systems, [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 uninterruptible power supply systems, including but not limited to:
 - i. UPS units and battery systems
 - ii. distribution equipment
 - iii. metering and monitoring equipment

- iv. control and protection systems
 - v. cables, cable containment, and reticulation
 - vi. earthing and bonding systems, and
 - vii. equipment racks, enclosures, frames, brackets and fixings.
- c) handling, transport to the Site, and storage on the Site.

Item 81455 Supply of Isolation Transformers, [*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 isolation transformers, including but not limited to:
 - i. transformers and associated equipment
 - ii. monitoring, control and protection systems
 - iii. cables, cable containment, and reticulation
 - iv. earthing and bonding systems, and
 - v. equipment racks, enclosures, frames, brackets and fixings.
- c) handling, transport to the Site, and storage on the Site.

Item 81456 Installation of High Voltage (HV) Power systems, [*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) installation of high voltage power systems, including but not limited to:
 - i. transformers, switchgear and distribution equipment
 - ii. metering and monitoring equipment
 - iii. control and protection systems
 - iv. cables, cable containment, and reticulation
 - v. earthing and bonding systems, and
 - vi. equipment structures, enclosures, frames, brackets and fixings.
- c) running, terminating and testing of HV cables
- d) connection and termination of earthing and bonding systems
- e) pre-energisation and post-energisation testing and commissioning

- f) inspection, testing, certification and approvals as required, and
- g) rehandling and transport on the Site, where necessary.

Item 81457 Installation of Low Voltage (LV) Power systems, [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) installation of low voltage power systems, including but not limited to:
 - i. switchboards, distribution boards and distribution equipment
 - ii. metering and monitoring equipment
 - iii. control and protection systems
 - iv. power outlets and wall sockets
 - v. cables, cable containment, and reticulation
 - vi. earthing and bonding systems, and
 - vii. equipment racks, enclosures, frames, brackets and fixings.
- c) running, terminating and testing of LV cables
- d) connection and termination of earthing and bonding systems
- e) testing and commissioning
- f) inspection, testing, certification and approvals as required, and
- g) rehandling and transport on the Site, where necessary.

Item 81458 Installation of Solar Photovoltaic (PV) Power systems, [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) installation of solar photovoltaic power systems, including but not limited to:
 - i. solar panels
 - ii. inverters and power conversion equipment
 - iii. metering and monitoring equipment
 - iv. control and protection systems
 - v. cables, cable containment, and reticulation
 - vi. earthing and bonding systems, and

- vii. equipment racks, enclosures, frames, brackets and fixings.
- c) running, terminating and testing of cables
- d) connection and termination of earthing and bonding systems
- e) testing and commissioning
- f) inspection, testing, certification and approvals as required, and
- g) rehandling and transport on the Site, where necessary.

Item 81459 Installation of Uninterruptible Power Supply (UPS) systems, [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) installation of uninterruptible power supply systems, including but not limited to:
 - i. UPS units and battery systems
 - ii. distribution equipment
 - iii. metering and monitoring equipment
 - iv. control and protection systems
 - v. cables, cable containment, and reticulation
 - vi. earthing and bonding systems, and
 - vii. equipment racks, enclosures, frames, brackets and fixings.
- c) running, terminating and testing of cables
- d) connection and termination of earthing and bonding systems
- e) testing and commissioning
- f) inspection, testing, certification and approvals as required, and
- g) rehandling and transport on the Site, where necessary.

Item 81460 Installation of Isolation Transformers, [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) installation of isolation transformers, including but not limited to:
 - i. transformers and associated equipment
 - ii. monitoring, control and protection systems

- iii. cables, cable containment, and reticulation
 - iv. earthing and bonding systems, and
 - v. equipment racks, enclosures, frames, brackets and fixings.
- c) running, terminating and testing of cables
 - d) connection and termination of earthing and bonding systems
 - e) testing and commissioning
 - f) inspection, testing, certification and approvals as required, and
 - g) rehandling and transport on the Site, where necessary.

Item 81461 Supply and installation of High Voltage (HV) Power systems, [*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 and installation of high voltage power systems, including but not limited to:
 - i. transformers, switchgear and distribution equipment
 - ii. metering and monitoring equipment
 - iii. control and protection systems
 - iv. cables, cable containment, and reticulation
 - v. earthing and bonding systems, and
 - vi. equipment structures, enclosures, frames, brackets and fixings.
- c) running, terminating and testing of HV cables
- d) connection and termination of earthing and bonding systems
- e) pre-energisation and post-energisation testing and commissioning
- f) inspection, testing, certification and approvals as required
- g) handling, transport to the Site, and storage on the Site, and
- h) rehandling and transport on the Site, where necessary.

Item 81462 Supply and installation of Low Voltage (LV) Power systems, [*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 and installation of low voltage power systems, including but not limited to:

- i. switchboards, distribution boards and distribution equipment
 - ii. metering and monitoring equipment
 - iii. control and protection systems
 - iv. power outlets and wall sockets
 - v. cables, cable containment, and reticulation
 - vi. earthing and bonding systems, and
 - vii. equipment racks, enclosures, frames, brackets and fixings.
- c) running, terminating and testing of LV cables
 - d) connection and termination of earthing and bonding systems
 - e) testing and commissioning
 - f) inspection, testing, certification and approvals as required
 - g) handling, transport to the Site, and storage on the Site, and
 - h) rehandling and transport on the Site, where necessary.

Item 81463 Supply and installation of Solar Photovoltaic (PV) Power systems, [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 and installation of solar photovoltaic power systems, including but not limited to:
 - i. solar panels
 - ii. inverters and power conversion equipment
 - iii. metering and monitoring equipment
 - iv. control and protection systems
 - v. cables, cable containment, and reticulation
 - vi. earthing and bonding systems, and
 - vii. equipment racks, enclosures, frames, brackets and fixings.
- c) running, terminating and testing of cables
- d) connection and termination of earthing and bonding systems
- e) testing and commissioning

- f) inspection, testing, certification and approvals as required
- g) handling, transport to the Site, and storage on the Site, and
- h) rehandling and transport on the Site, where necessary.

Item 81464 Supply and installation of Uninterruptible Power Supply (UPS) systems, [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 and installation of uninterruptible power supply systems, including but not limited to:
 - i. UPS units and battery systems
 - ii. distribution equipment
 - iii. metering and monitoring equipment
 - iv. control and protection systems
 - v. cables, cable containment, and reticulation
 - vi. earthing and bonding systems, and
 - vii. equipment racks, enclosures, frames, brackets and fixings.
- c) running, terminating and testing of cables
- d) connection and termination of earthing and bonding systems
- e) testing and commissioning
- f) inspection, testing, certification and approvals as required
- g) handling, transport to the Site, and storage on the Site, and
- h) rehandling and transport on the Site, where necessary.

Item 81465 Supply and installation of Isolation Transformers, [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 and installation of isolation transformers, including but not limited to:
 - i. transformers and associated equipment
 - ii. monitoring, control and protection systems
 - iii. cables, cable containment, and reticulation

- iv. earthing and bonding systems, and
 - v. equipment racks, enclosures, frames, brackets and fixings.
- c) running, terminating and testing of cables
 - d) connection and termination of earthing and bonding systems
 - e) testing and commissioning
 - f) inspection, testing, certification and approvals as required
 - g) handling, transport to the Site, and storage on the Site, and
 - h) rehandling and transport on the Site, where necessary.

Item 81466 Connection to High Voltage (HV) supply, [*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) connection to high voltage supply, including but not limited to:
 - i. cables, cable containment, reticulation, metering, earthing and bonding
 - ii. testing and commissioning
 - iii. coordination with relevant utility provider or council, and
 - iv. inspections and approvals.
- c) handling, transport to the Site, and storage on the Site, and
- d) rehandling and transport on the Site, where necessary

2.2.7 Lighting

Item 81481 Supply of Station Lighting systems, [*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 station lighting systems, including but not limited to:
 - i. internal station and platform lighting systems including luminaires, fittings, housings, and diffusers
 - ii. external station lighting systems including floodlights, bollard lights, and facade lighting
 - iii. emergency lighting systems including emergency luminaires, exit signs, and backup power supplies

- iv. control systems including control panels, sensors, timers and Digital Addressable Lighting Interface (DALI)
 - v. power supply equipment including connections, transformers, and circuit protection
 - vi. control and power cables, cable containment, and reticulation, and
 - vii. mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81482 Installation of Station Lighting systems, [*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) installation of station lighting systems, including but not limited to:
 - i. internal station and platform lighting systems including luminaires, fittings, housings, and diffusers
 - ii. external station lighting systems including floodlights, bollard lights, and facade lighting
 - iii. emergency lighting systems including emergency luminaires, exit signs, and backup power supplies
 - iv. control systems including control panels, sensors, timers and Digital Addressable Lighting Interface (DALI)
 - v. power supply equipment including connections, transformers, and circuit protection
 - vi. control and power cables, cable containment, and reticulation, and
 - vii. mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of control and power cables
- d) configuration and commissioning of lighting control systems
- e) inspection, testing, and certification as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81483 Supply and installation of Station Lighting systems, [*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 and installation of station lighting systems, including but not limited to:
 - i. internal station and platform lighting systems including luminaires, fittings, housings, and diffusers
 - ii. external station lighting systems including floodlights, bollard lights, and facade lighting
 - iii. emergency lighting systems including emergency luminaires, exit signs, and backup power supplies
 - iv. control systems including control panels, sensors, timers and Digital Addressable Lighting Interface (DALI)
 - v. power supply equipment including connections, transformers, and circuit protection
 - vi. control and power cables, cable containment, and reticulation, and
 - vii. mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of control and power cables
- d) configuration and commissioning of lighting control systems
- e) inspection, testing, and certification as required
- f) handling, transport to the Site, and storage on the Site, and
- g) rehandling and transport on the Site, where necessary.

2.2.8 Heating, Ventilation and Air Conditioning

Item 81491 Supply of Mechanical Ventilation systems, [*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 mechanical ventilation systems, including but not limited to:
 - i. fans
 - ii. control and monitoring systems including sensors, zone control, and BMS interfaces
 - iii. power supply equipment including connections, isolators, and circuit protection
 - iv. control and power cables, cable containment, and reticulation, and
 - v. mounting frames, brackets, and fixings.

- c) handling, transport to the Site, and storage on the Site.

Item 81492 Supply of Exhaust systems [*over track exhaust* | *under platform exhaust*], [*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 exhaust systems, including but not limited to:
 - i. fans
 - ii. distribution systems including ductwork, dampers, grilles, and diffusers
 - iii. control and monitoring systems including sensors, zone control, and BMS interfaces
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and
 - vi. mounting frames, brackets, and fixings.
- c) handling, transport to the Site, and storage on the Site.

Item 81493 Supply of Air Conditioning systems, [*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 air conditioning systems, including but not limited to:
 - i. air conditioning units including compressors, condensers, evaporators, chillers, pipework, valves, and drains
 - ii. distribution systems including ductwork, dampers, grilles, and diffusers
 - iii. filtration systems including filters, air quality sensors, and filtration control equipment
 - iv. control and monitoring systems including thermostats, temperature sensors, humidity sensors, zone control systems, and building management system interfaces
 - v. power supply equipment including connections, isolators, and circuit protection
 - vi. control and power cables, cable containment, and reticulation, and

- vii. mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81494 Installation of Mechanical Ventilation systems, [*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) installation of mechanical ventilation systems, including but not limited to:
 - i. fans
 - ii. control and monitoring systems including sensors, zone control, and BMS interfaces
 - iii. power supply equipment including connections, isolators, and circuit protection
 - iv. control and power cables, cable containment, and reticulation, and
 - v. mounting frames, brackets, and fixings.
- c) running, terminating and testing of control and power cables
- d) configuration and commissioning including integration with building management systems
- e) inspection, testing, and certification as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81495 Installation of Exhaust systems [*over track exhaust* | *under platform exhaust*], [*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) installation of exhaust systems, including but not limited to:
 - i. fans
 - ii. distribution systems including ductwork, dampers, grilles, and diffusers
 - iii. control and monitoring systems including sensors, zone control, and BMS interfaces
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and

- vi. mounting frames, brackets, and fixings.
- c) running, terminating and testing of control and power cables
- d) configuration and commissioning including integration with building management systems
- e) inspection, testing, and certification as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81496 Installation of Air Conditioning systems, [*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) installation of air conditioning systems, including but not limited to:
 - i. air conditioning units including compressors, condensers, evaporators, chillers, pipework, valves, and drains
 - ii. distribution systems including ductwork, dampers, grilles, and diffusers
 - iii. filtration systems including filters, air quality sensors, and filtration control equipment
 - iv. control and monitoring systems including thermostats, temperature sensors, humidity sensors, zone control systems, and building management system interfaces
 - v. power supply equipment including connections, isolators, and circuit protection
 - vi. control and power cables, cable containment, and reticulation, and
 - vii. mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of control and power cables
- d) configuration and commissioning including integration with building management systems
- e) inspection, testing, and certification as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81497 Supply and installation of Mechanical Ventilation systems, [*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 and installation of mechanical ventilation systems, including but not limited to:
 - i. fans
 - ii. control and monitoring systems including sensors, zone control, and BMS interfaces
 - iii. power supply equipment including connections, isolators, and circuit protection
 - iv. control and power cables, cable containment, and reticulation, and
 - v. mounting frames, brackets, and fixings.
- c) running, terminating and testing of control and power cables
- d) configuration and commissioning including integration with building management systems
- e) inspection, testing, and certification as required
- f) handling, transport to the Site, and storage on the Site, and
- g) rehandling and transport on the Site, where necessary.

Item 81498 Supply and installation of Exhaust systems [*over track exhaust* | *under platform exhaust*], [*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 and installation of exhaust systems, including but not limited to:
 - i. fans
 - ii. distribution systems including ductwork, dampers, grilles, and diffusers
 - iii. control and monitoring systems including sensors, zone control, and BMS interfaces
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and
 - vi. mounting frames, brackets, and fixings.
- c) running, terminating and testing of control and power cables
- d) configuration and commissioning including integration with building management systems

- e) inspection, testing, and certification as required
- f) handling, transport to the Site, and storage on the Site, and
- g) rehandling and transport on the Site, where necessary.

Item 81499 Supply and installation of Air Conditioning systems, [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 and installation of air conditioning systems, including but not limited to:
 - i. air conditioning units including compressors, condensers, evaporators, chillers, pipework, valves, and drains
 - ii. distribution systems including ductwork, dampers, grilles, and diffusers
 - iii. filtration systems including filters, air quality sensors, and filtration control equipment
 - iv. control and monitoring systems including thermostats, temperature sensors, humidity sensors, zone control systems, and building management system interfaces
 - v. power supply equipment including connections, isolators, and circuit protection
 - vi. control and power cables, cable containment, and reticulation, and
 - vii. mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of control and power cables
- d) configuration and commissioning including integration with building management systems
- e) inspection, testing, and certification as required
- f) handling, transport to the Site, and storage on the Site, and
- g) rehandling and transport on the Site, where necessary.

2.2.9 Vertical Transport and Moving Walkways

Item 81511 Supply of Lifts, [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 lifts, including but not limited to:

- i. lift car including structure, doors, interior finishes, lighting, control panels, emergency phone, and audio-visual messaging systems
 - ii. machinery including motor, drive system, cables, counterweights, and guide rails
 - iii. control system including controllers, automatic rescue device, annunciation panels, and monitoring equipment
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81512 Supply of Escalators, [*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 escalators, including but not limited to:
 - i. steps, balustrades, cladding, panels, skirts, decking and floor panels
 - ii. machinery including belts, chains, drive system, motor, handrails, and braking system
 - iii. control system including controllers, sensors, emergency stop buttons, and monitoring equipment
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81513 Supply of Stairlifts, [*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 stairlifts, including but not limited to:
 - i. platforms or seats, drive system, motor, guide rails, and braking system

- ii. safety devices including safety barriers, belts, sensors, and emergency stop buttons
 - iii. control system including controllers, call stations, and monitoring equipment
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81514 Supply of Moving Walkways, [*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 moving walkways, including but not limited to:
 - i. steps, balustrades, cladding, panels, skirts, decking and floor panels
 - ii. machinery including belts, chains, drive system, motor, handrails, and braking system
 - iii. control system including controllers, sensors, emergency stop buttons, and monitoring equipment
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81515 Installation of Lifts, [*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) installation of lifts, including but not limited to:
 - i. lift car including structure, doors, interior finishes, lighting, control panels, emergency phone, and audio-visual messaging systems
 - ii. machinery including motor, drive system, cables, counterweights, and guide rails

- iii. control system including controllers, automatic rescue device, annunciation panels, and monitoring equipment
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) local assembly and installation of lift car, lift machinery and equipment in lift shaft
 - d) connection and termination of power and control systems
 - e) inspection, testing, commissioning, certification and approvals as required, and
 - f) rehandling and transport on the Site, where necessary.

Item 81516 Installation of Escalators, [*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) installation of escalators, including but not limited to:
 - i. steps, balustrades, cladding, panels, skirts, decking and floor panels
 - ii. machinery including belts, chains, drive system, motor, handrails, and braking system
 - iii. control system including controllers, sensors, emergency stop buttons, and monitoring equipment
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) local assembly and installation of escalator machinery and equipment
- d) connection and termination of power and control systems
- e) inspection, testing, commissioning, certification and approvals as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81517 Installation of Stairlifts, [*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) installation of stairlifts, including but not limited to:
 - i. platforms or seats, drive system, motor, guide rails, and braking system
 - ii. safety devices including safety barriers, belts, sensors, and emergency stop buttons
 - iii. control system including controllers, call stations, and monitoring equipment
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) local assembly and installation of stairlift machinery and equipment
- d) connection and termination of power and control systems
- e) inspection, testing, commissioning, certification and approvals as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81518 Installation of Moving Walkways, [*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) installation of moving walkways, including but not limited to:
 - i. steps, balustrades, cladding, panels, skirts, decking and floor panels
 - ii. machinery including belts, chains, drive system, motor, handrails, and braking system
 - iii. control system including controllers, sensors, emergency stop buttons, and monitoring equipment
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) local assembly and installation of moving walkway machinery and equipment
- d) connection and termination of power and control systems
- e) inspection, testing, commissioning, certification and approvals as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81519 Supply and installation of Lifts, [*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 and installation of lifts, including but not limited to:
 - i. lift car including structure, doors, interior finishes, lighting, control panels, emergency phone, and audio-visual messaging systems
 - ii. machinery including motor, drive system, cables, counterweights, and guide rails
 - iii. control system including controllers, automatic rescue device, annunciation panels, and monitoring equipment
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) local assembly and installation of lift car, lift machinery and equipment in lift shaft
- d) connection and termination of power and control systems
- e) inspection, testing, commissioning, certification and approvals as required
- f) handling, transport to the Site, and storage on the Site, and
- g) rehandling and transport on the Site, where necessary.

Item 81520 Supply and installation of Escalators, [*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 and installation of escalators, including but not limited to:
 - i. steps, balustrades, cladding, panels, skirts, decking and floor panels
 - ii. machinery including belts, chains, drive system, motor, handrails, and braking system
 - iii. control system including controllers, sensors, emergency stop buttons, and monitoring equipment
 - iv. power supply equipment including connections, isolators, and circuit protection

- v. control and power cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) local assembly and installation of escalator machinery and equipment
 - d) connection and termination of power and control systems
 - e) inspection, testing, commissioning, certification and approvals as required
 - f) handling, transport to the Site, and storage on the Site, and
 - g) rehandling and transport on the Site, where necessary.

Item 81521 Supply and installation of Stairlifts, [*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 and installation of stairlifts, including but not limited to:
 - i. platforms or seats, drive system, motor, guide rails, and braking system
 - ii. safety devices including safety barriers, belts, sensors, and emergency stop buttons
 - iii. control system including controllers, call stations, and monitoring equipment
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) local assembly and installation of stairlift machinery and equipment
- d) connection and termination of power and control systems
- e) inspection, testing, commissioning, certification and approvals as required
- f) handling, transport to the Site, and storage on the Site, and
- g) rehandling and transport on the Site, where necessary.

Item 81522 Supply and installation of Moving Walkways, [*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 and installation of moving walkways, including but not limited to:
 - i. steps, balustrades, cladding, panels, skirts, decking and floor panels

- ii. machinery including belts, chains, drive system, motor, handrails, and braking system
 - iii. control system including controllers, sensors, emergency stop buttons, and monitoring equipment
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) local assembly and installation of moving walkway machinery and equipment
 - d) connection and termination of power and control systems
 - e) inspection, testing, commissioning, certification and approvals as required
 - f) handling, transport to the Site, and storage on the Site, and
 - g) rehandling and transport on the Site, where necessary.

2.2.10 Platform Screen Doors

Item 81531 Supply of Platform Screen Door systems, [*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 platform screen door systems, including but not limited to:
 - i. automatic sliding doors including door panels, frames, glazing, seals, manual release mechanisms, locking units and signage
 - ii. emergency egress doors including door panels, frames, glazing, seals, manual release mechanisms, push-bars, handles, locking units and signage
 - iii. platform end doors including door panels, frames, glazing, seals, manual release mechanisms, push-bars, handles, locking units and signage
 - iv. fixed panels including panels, frames, glazing and seals
 - v. header boxes including header structure, door drive assemblies, control units, cable reticulation and maintenance access panels
 - vi. platform threshold pieces including threshold structure, door guide tracks, and supporting elements
 - vii. control system including local control panels, sensors, interlocks, signalling interfaces, audiovisual indicators and monitoring equipment

- viii. power supply equipment including connections, isolators, and circuit protection
 - ix. control and power cables, cable containment, and reticulation
 - x. safety treatments, including entrapment mitigation devices, foot deflectors, body deflectors, crowd guides, gap fillers, and soft leading edges, as required, and
 - xi. mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81532 Installation of Platform Screen Door systems, [*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) installation of platform screen door systems, including but not limited to:
 - i. automatic sliding doors including door panels, frames, glazing, seals, manual release mechanisms, locking units and signage
 - ii. emergency egress doors including door panels, frames, glazing, seals, manual release mechanisms, push-bars, handles, locking units and signage
 - iii. platform end doors including door panels, frames, glazing, seals, manual release mechanisms, push-bars, handles, locking units and signage
 - iv. fixed panels including panels, frames, glazing and seals
 - v. header boxes including header structure, door drive assemblies, control units, cable reticulation and maintenance access panels
 - vi. platform threshold pieces including threshold structure, door guide tracks, and supporting elements
 - vii. control system including local control panels, sensors, interlocks, signalling interfaces, audiovisual indicators and monitoring equipment
 - viii. power supply equipment including connections, isolators, and circuit protection
 - ix. control and power cables, cable containment, and reticulation
 - x. safety treatments, including entrapment mitigation devices, foot deflectors, body deflectors, crowd guides, gap fillers, and soft leading edges, as required, and
 - xi. mounting brackets, fixings, earthing and bonding.

- c) local assembly and installation of platform screen door systems including associated doors, panels, frames, cables and equipment
- d) leveling and adjustment to specified tolerances
- e) sealing of all joints and connections between panels and to station walls and floors
- f) connection and termination of power and control systems
- g) integration and testing with train detection and signalling systems
- h) inspection, testing, commissioning, certification and approvals as required, and
- i) rehandling and transport on the Site, where necessary.

Item 81533 Supply and installation of Platform Screen Door systems, [*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 and installation of platform screen door systems, including but not limited to:
 - i. automatic sliding doors including door panels, frames, glazing, seals, manual release mechanisms, locking units and signage
 - ii. emergency egress doors including door panels, frames, glazing, seals, manual release mechanisms, push-bars, handles, locking units and signage
 - iii. platform end doors including door panels, frames, glazing, seals, manual release mechanisms, push-bars, handles, locking units and signage
 - iv. fixed panels including panels, frames, glazing and seals
 - v. header boxes including header structure, door drive assemblies, control units, cable reticulation and maintenance access panels
 - vi. platform threshold pieces including threshold structure, door guide tracks, and supporting elements
 - vii. control system including local control panels, sensors, interlocks, signalling interfaces, audiovisual indicators and monitoring equipment
 - viii. power supply equipment including connections, isolators, and circuit protection
 - ix. control and power cables, cable containment, and reticulation

- x. safety treatments, including entrapment mitigation devices, foot deflectors, body deflectors, crowd guides, gap fillers, and soft leading edges, as required, and
 - xi. mounting brackets, fixings, earthing and bonding.
- c) local assembly and installation of platform screen door systems including associated doors, panels, frames, cables and equipment
 - d) leveling and adjustment to specified tolerances
 - e) sealing of all joints and connections between panels and to station walls and floors
 - f) connection and termination of power and control systems
 - g) integration and testing with train detection and signalling systems
 - h) inspection, testing, commissioning, certification and approvals as required
 - i) handling, transport to the Site, and storage on the Site, and
 - j) rehandling and transport on the Site, where necessary.

2.2.11 Mechanical Platform Gap Fillers

Item 81541 Supply of Mechanical Platform Gap Filler systems, [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 mechanical platform gap filler systems, including but not limited to:
 - i. mechanical gap filler mechanisms including panels, extension and retraction devices
 - ii. control systems including sensors, controllers, and interfaces to train detection or signalling systems
 - iii. power supply equipment including connections, isolators, and circuit protection
 - iv. control and power cables, cable containment, and reticulation, and
 - v. mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81542 Installation of Mechanical Platform Gap Filler systems, [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) installation of mechanical platform gap filler systems, including but not limited to:
 - i. mechanical gap filler mechanisms including panels, extension and retraction devices
 - ii. control systems including sensors, controllers, and interfaces to train detection or signalling systems
 - iii. power supply equipment including connections, isolators, and circuit protection
 - iv. control and power cables, cable containment, and reticulation, and
 - v. mounting brackets, fixings, earthing and bonding.
- c) local assembly and installation of mechanical gap filler systems including mechanisms, supports, and equipment
- d) leveling and adjustment to specified tolerances
- e) connection and termination of power and control systems
- f) integration and testing with train detection systems
- g) inspection, testing, commissioning, certification and approvals as required, and
- h) rehandling and transport on the Site, where necessary.

Item 81543 Supply and Installation of Mechanical Platform Gap Filler systems, [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 and installation of mechanical platform gap filler systems, including but not limited to:
 - i. mechanical gap filler mechanisms including panels, extension and retraction devices
 - ii. control systems including sensors, controllers, and interfaces to train detection or signalling systems
 - iii. power supply equipment including connections, isolators, and circuit protection
 - iv. control and power cables, cable containment, and reticulation, and
 - v. mounting brackets, fixings, earthing and bonding.

- c) local assembly and installation of mechanical gap filler systems including mechanisms, supports, and equipment
- d) leveling and adjustment to specified tolerances
- e) connection and termination of power and control systems
- f) integration and testing with train detection systems
- g) inspection, testing, commissioning, certification and approvals as required
- h) handling, transport to the Site, and storage on the Site, and
- i) rehandling and transport on the Site, where necessary.

2.2.12 Hydraulics

Item 81551 Supply of Hydraulic systems [*potable* | *non-potable*], [*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 hydraulic systems, including but not limited to:
 - i. water supply systems including pipework, valves, fittings, meters and regulators, and
 - ii. drainage systems including pipework, pits, traps, vents, grates, backflow prevention devices and inspection points.
- c) handling, transport to the Site, and storage on the Site.

Item 81552 Installation of Hydraulic systems [*potable* | *non-potable*], [*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) installation of hydraulic systems, including but not limited to:
 - i. water supply systems including pipework, valves, fittings, meters and regulators, and
 - ii. drainage systems including pipework, pits, traps, vents, grates, backflow prevention devices and inspection points.
- c) connection and termination to existing systems
- d) flushing and disinfection of potable water systems, where applicable
- e) inspection, pressure testing, flow testing and certification as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81553 Supply and installation of Hydraulic systems [*potable* | *non-potable*], [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 and installation of hydraulic systems, including but not limited to:
 - i. water supply systems including pipework, valves, fittings, meters and regulators, and
 - ii. drainage systems including pipework, pits, traps, vents, grates, backflow prevention devices and inspection points.
- c) connection and termination to existing systems
- d) flushing and disinfection of potable water systems, where applicable
- e) inspection, pressure testing, flow testing and certification as required
- f) handling, transport to the Site, and storage on the Site, and
- g) rehandling and transport on the Site, where necessary.

Item 81554 Connection to Water Mains supply, [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) connection to water mains supply, including but not limited to:
 - i. pipework, valves, fittings, and meters
 - ii. pressure testing and commissioning, and
 - iii. inspections and approvals.
- c) handling, transport to the Site, and storage on the Site, and
- d) rehandling and transport on the Site, where necessary.

Item 81555 Connection to Stormwater discharge, [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) connection to stormwater discharge, including but not limited to:
 - i. pipework and fittings
 - ii. pressure testing and commissioning

- iii. coordination with relevant utility provider or council, and
 - iv. inspections and approvals.
- c) handling, transport to the Site, and storage on the Site, and
- d) rehandling and transport on the Site, where necessary.

Item 81556 Connection to Sewerage discharge, [*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) connection to sewerage discharge, including but not limited to:
 - i. pipework and fittings
 - ii. pressure testing and commissioning
 - iii. coordination with relevant utility provider or council, and
 - iv. inspections and approvals.
- c) handling, transport to the Site, and storage on the Site, and
- d) rehandling and transport on the Site, where necessary

2.2.13 IT Network Infrastructure and Building Management Systems

Item 81566 Supply of IT Network Infrastructure, [*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 IT network infrastructure, including but not limited to:
 - i. routers, switches, firewalls, and security appliances
 - ii. data outlets, wall sockets, wireless access points, antennas, and repeaters
 - iii. network management systems including monitoring software, management tools, and network controllers
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. data cables, fibre optic cables, cable containment, and reticulation, and
 - vi. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81567 Supply of Public Wi-Fi systems, [*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 public Wi-Fi systems, including but not limited to:
 - i. wireless access points, antennas, and repeaters
 - ii. Wi-Fi management systems including guest portal and authentication systems
 - iii. power supply equipment including connections, isolators, and circuit protection
 - iv. data, control and power cables, cable containment, and reticulation, and
 - v. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81568 Supply of Building Management Systems, [*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 building management systems, including but not limited to:
 - i. centralised equipment including servers, workstations, software, and databases
 - ii. field equipment including controllers, sensors, meters, actuators, and monitoring devices
 - iii. network equipment including switches, routers, gateways, and communication devices
 - iv. interfaces to HVAC systems, lighting systems, fire systems, access control systems, security systems, lifts, escalator and moving walks, and other building services
 - v. power supply equipment including connections, isolators, and circuit protection
 - vi. data, control and power cables, cable containment, and reticulation, and
 - vii. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81569 Installation of IT Network Infrastructure, [*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) installation of IT network infrastructure, including but not limited to:
 - i. routers, switches, firewalls, and security appliances
 - ii. data outlets, wall sockets, wireless access points, antennas, and repeaters
 - iii. network management systems including monitoring software, management tools, and network controllers
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. data cables, fibre optic cables, cable containment, and reticulation, and
 - vi. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of data and fibre optic cables
- d) configuration and commissioning of network systems
- e) inspection, testing, and certification as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81570 Installation of Public Wi-Fi systems, [*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) installation of public Wi-Fi systems, including but not limited to:
 - i. wireless access points, antennas, and repeaters
 - ii. Wi-Fi management systems including guest portal and authentication systems
 - iii. power supply equipment including connections, isolators, and circuit protection
 - iv. data, control and power cables, cable containment, and reticulation, and
 - v. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of data and power cables

- d) configuration and commissioning of Wi-Fi systems including guest portal and authentication
- e) inspection, testing, and certification as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81571 Installation of Building Management Systems, [*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) installation of building management systems, including but not limited to:
 - i. centralised equipment including servers, workstations, software, and databases
 - ii. field equipment including controllers, sensors, meters, actuators, and monitoring devices
 - iii. network equipment including switches, routers, gateways, and communication devices
 - iv. interfaces to HVAC systems, lighting systems, fire systems, access control systems, security systems, lifts, escalator and moving walks, and other building services
 - v. power supply equipment including connections, isolators, and circuit protection
 - vi. data, control and power cables, cable containment, and reticulation, and
 - vii. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of data, control and power cables
- d) configuration and commissioning of BMS including integration with building services
- e) inspection, testing, and certification as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81572 Supply and installation of IT Network Infrastructure, [*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 and installation of IT network infrastructure, including but not limited to:

- i. routers, switches, firewalls, and security appliances
 - ii. data outlets, wall sockets, wireless access points, antennas, and repeaters
 - iii. network management systems including monitoring software, management tools, and network controllers
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. data cables, fibre optic cables, cable containment, and reticulation, and
 - vi. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of data and fibre optic cables
 - d) configuration and commissioning of network systems
 - e) inspection, testing, and certification as required
 - f) handling, transport to the Site, and storage on the Site, and
 - g) rehandling and transport on the Site, where necessary.

Item 81573 Supply and installation of Public Wi-Fi systems, [*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 and installation of public Wi-Fi systems, including but not limited to:
 - i. wireless access points, antennas, and repeaters
 - ii. Wi-Fi management systems including guest portal and authentication systems
 - iii. power supply equipment including connections, isolators, and circuit protection
 - iv. data, control and power cables, cable containment, and reticulation, and
 - v. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of data and power cables
- d) configuration and commissioning of Wi-Fi systems including guest portal and authentication
- e) inspection, testing, and certification as required
- f) handling, transport to the Site, and storage on the Site, and

g) rehandling and transport on the Site, where necessary.

Item 81574 Supply and installation of Building Management Systems, [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 and installation of building management systems, including but not limited to:
 - i. centralised equipment including servers, workstations, software, and databases
 - ii. field equipment including controllers, sensors, meters, actuators, and monitoring devices
 - iii. network equipment including switches, routers, gateways, and communication devices
 - iv. interfaces to HVAC systems, lighting systems, fire systems, access control systems, security systems, lifts, escalator and moving walks, and other building services
 - v. power supply equipment including connections, isolators, and circuit protection
 - vi. data, control and power cables, cable containment, and reticulation, and
 - vii. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of data, control and power cables
- d) configuration and commissioning of BMS including integration with building services
- e) inspection, testing, and certification as required
- f) handling, transport to the Site, and storage on the Site, and
- g) rehandling and transport on the Site, where necessary.

2.2.14 Fire Services

Item 81586 Supply of Fire Detection and Alarm Systems [open station | enclosed station | underground station], [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 Fire Detection And Alarm Systems (FDAS), including but not limited to:
 - i. Manual Call Points (MCP) and automatic detectors, including smoke detectors, heat detectors, or other as required
 - ii. Fire Detection Control And Indicating Equipment (FDCIE), including Fire Indicator Panels (FIP), mimic panels and Automatic Signalling Equipment (ASE) as required
 - iii. Emergency Warning And Intercommunication Systems (EWIS) and Warden Intercommunication Phones (WIP) as required
 - iv. audible alarms and visual alarms as required
 - v. power supply equipment including connections, isolators, battery backup and circuit protection
 - vi. control and power cables, cable containment, and reticulation, and
 - vii. mounting structures, brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81587 Supply of Fire Hydrant Systems [*open station* | *enclosed station* | *underground station*], [*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 fire hydrant systems, including but not limited to:
 - i. fire hydrants, valves, and cabinets
 - ii. fire pumping systems including fire boosters, pumps, controllers, and associated equipment
 - iii. pipework including pipes, fittings, valves, supports, hangers, and seals
 - iv. control and power cables, cable containment, and reticulation
 - v. ancillary equipment, signage, and baseline data, and
 - vi. mounting structures, brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81588 Supply of Fire Water Tanks, [*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 fire water tanks, including but not limited to:
 - i. fire water tanks and structures, and
 - ii. mounting structures, brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81589 Supply of Automatic Sprinkler Systems [*open station* | *enclosed station* | *underground station*], [*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 automatic sprinkler systems, including but not limited to:
 - i. sprinkler heads, flow switches, and pressure gauges
 - ii. pipework including pipes, fittings, valves, supports, hangers, and seals
 - iii. system monitoring devices and components
 - iv. pumps, tanks, and booster assemblies
 - v. control and power cables, cable containment, and reticulation
 - vi. ancillary equipment, signage, and baseline data, and
 - vii. mounting structures, brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81590 Supply of Fire Hose Reels, [*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 fire hose reels, including but not limited to:
 - i. hose reels, hoses, nozzles, and cabinets
 - ii. water supplies, metered water supply, hydrant mains tapping
 - iii. pipework including pipes, fittings, valves, supports, hangers, and seals, and
 - iv. mounting structures, signage, brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81591 Supply of Gaseous Fire Suppression systems, [*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 gaseous fire suppression systems, including but not limited to:
 - i. gaseous suppression systems including agent storage cylinders, discharge nozzles, actuators, and control equipment
 - ii. emergency warning, detection, actual and control systems
 - iii. safety systems, pressure relief vents
 - iv. pipework including pipes, fittings, valves, supports, hangers, and seals
 - v. control and power cables, cable containment, and reticulation, and
 - vi. mounting structures, signage, brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81592 Installation of Fire Detection and Alarm Systems [*open station* | *enclosed station* | *underground station*], [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) installation of Fire Detection And Alarm Systems (FDAS) including but not limited to:
 - i. Manual Call Points (MCP) and automatic detectors, including smoke detectors, heat detectors, or other as required
 - ii. Fire Detection Control And Indicating Equipment (FDCIE), including Fire Indicator Panels (FIP), mimic panels and Automatic Signalling Equipment (ASE) as required
 - iii. Emergency Warning And Intercommunication Systems (EWIS) and Warden Intercommunication Phones (WIP) as required
 - iv. audible alarms and visual alarms as required
 - v. power supply equipment including connections, isolators, battery backup and circuit protection
 - vi. control and power cables, cable containment, and reticulation, and
 - vii. mounting structures, brackets, fixings, earthing and bonding.
- c) connection and termination of control and power systems
- d) inspection, testing, certification and approvals as required, and
- e) rehandling and transport on the Site, where necessary.

Item 81593 Installation of Fire Hydrant Systems [*open station* | *enclosed station* | *underground station*], [*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) installation of fire hydrant systems, including but not limited to:
 - i. fire hydrants, valves, and cabinets
 - ii. fire pumping systems including fire boosters, pumps, controllers, and associated equipment
 - iii. pipework including pipes, fittings, valves, supports, hangers, and seals
 - iv. control and power cables, cable containment, and reticulation
 - v. ancillary equipment, signage, and baseline data, and
 - vi. mounting structures, brackets, fixings, earthing and bonding.
- c) connection and termination of control and power systems
- d) pressure testing, flow testing, and commissioning
- e) inspection, testing, certification and approvals as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81594 Installation of Fire Water Tanks, [*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) installation of fire water tanks, including but not limited to:
 - i. fire water tanks and structures, and
 - ii. mounting structures, brackets, fixings, earthing and bonding.
- c) connection and termination of control, monitoring and power systems
- d) pressure testing, flow testing, and commissioning
- e) inspection, testing, certification and approvals as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81595 Installation of Automatic Sprinkler Systems, [*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) installation of automatic sprinkler systems, including but not limited to:
 - i. sprinkler heads, flow switches, and pressure gauges
 - ii. pipework including pipes, fittings, valves, supports, hangers, and seals
 - iii. system monitoring devices and components
 - iv. pumps, tanks, and booster assemblies
 - v. control and power cables, cable containment, and reticulation
 - vi. ancillary equipment, signage, and baseline data, and
 - vii. mounting structures, brackets, fixings, earthing and bonding.
- c) connection and termination of control and power systems
- d) pressure testing, flow testing, and commissioning
- e) inspection, testing, certification and approvals as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81596 Installation of Fire Hose Reels, [*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) installation of fire hose reels, including but not limited to:
 - i. hose reels, hoses, nozzles, and cabinets
 - ii. water supplies, metered water supply, hydrant mains tapping
 - iii. pipework including pipes, fittings, valves, supports, hangers, and seals, and
 - iv. mounting structures, signage, brackets, fixings, earthing and bonding.
- c) pressure testing, flow testing, and commissioning
- d) inspection, testing, certification and approvals as required, and
- e) rehandling and transport on the Site, where necessary.

Item 81597 Installation of Gaseous Fire Suppression systems, [*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) installation of gaseous fire suppression systems, including but not limited to:
 - i. gaseous suppression systems including agent storage cylinders, discharge nozzles, actuators, and control equipment

- ii. emergency warning, detection, actual and control systems
 - iii. safety systems, pressure relief vents
 - iv. pipework including pipes, fittings, valves, supports, hangers, and seals
 - v. control and power cables, cable containment, and reticulation, and
 - vi. mounting structures, signage, brackets, fixings, earthing and bonding.
- c) connection and termination of control and power systems
 - d) pressure testing and commissioning
 - e) inspection, testing, certification and approvals as required, and
 - f) rehandling and transport on the Site, where necessary.

Item 81598 Supply and installation of Fire Detection and Alarm Systems [*open station* | *enclosed station* | *underground station*], [*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 and installation of Fire Detection And Alarm Systems (FDAS) including but not limited to:
 - i. Manual Call Points (MCP) and automatic detectors, including smoke detectors, heat detectors, or other as required
 - ii. Fire Detection Control And Indicating Equipment (FDCIE), including Fire Indicator Panels (FIP), mimic panels and Automatic Signalling Equipment (ASE) as required
 - iii. Emergency Warning And Intercommunication Systems (EWIS) and Warden Intercommunication Phones (WIP) as required
 - iv. audible alarms and visual alarms as required
 - v. power supply equipment including connections, isolators, battery backup and circuit protection
 - vi. control and power cables, cable containment, and reticulation, and
 - vii. mounting structures, brackets, fixings, earthing and bonding.
- c) connection and termination of control and power systems
- d) pressure testing, flow testing, and commissioning
- e) inspection, testing, certification and approvals as required

- f) handling, transport to the Site, and storage on the Site, and
- g) rehandling and transport on the Site, where necessary.

Item 81599 Supply and installation of Fire Hydrant Systems [*open station* | *enclosed station* | *underground station*], [*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 and installation of fire hydrant systems, including but not limited to:
 - i. fire hydrants, valves, and cabinets
 - ii. fire pumping systems including fire boosters, pumps, controllers, and associated equipment
 - iii. pipework including pipes, fittings, valves, supports, hangers, and seals
 - iv. control and power cables, cable containment, and reticulation
 - v. ancillary equipment, signage, and baseline data, and
 - vi. mounting structures, brackets, fixings, earthing and bonding.
- c) connection and termination of control and power systems
- d) pressure testing, flow testing, and commissioning
- e) inspection, testing, certification and approvals as required
- f) handling, transport to the Site, and storage on the Site, and
- g) rehandling and transport on the Site, where necessary.

Item 81600 Supply and installation of Fire Water Tanks, [*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 and installation of fire water tanks, including but not limited to:
 - i. fire water tanks and structures, and
 - ii. mounting structures, brackets, fixings, earthing and bonding.
- c) connection and termination of control, monitoring and power systems
- d) pressure testing, flow testing, and commissioning
- e) inspection, testing, certification and approvals as required
- f) handling, transport to the Site, and storage on the Site, and

- g) rehandling and transport on the Site, where necessary.

Item 81601 Supply and installation of Automatic Sprinkler Systems, [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 and installation of automatic sprinkler systems, including but not limited to:
 - i. sprinkler heads, flow switches, and pressure gauges
 - ii. pipework including pipes, fittings, valves, supports, hangers, and seals
 - iii. system monitoring devices and components
 - iv. pumps, tanks, and booster assemblies
 - v. control and power cables, cable containment, and reticulation
 - vi. ancillary equipment, signage, and baseline data, and
 - vii. mounting structures, brackets, fixings, earthing and bonding.
- c) connection and termination of control and power systems
- d) pressure testing, flow testing, and commissioning
- e) inspection, testing, certification and approvals as required
- f) handling, transport to the Site, and storage on the Site, and
- g) rehandling and transport on the Site, where necessary.

Item 81602 Supply and installation of Fire Hose Reels, [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 and installation of fire hose reels, including but not limited to:
 - i. hose reels, hoses, nozzles, and cabinets
 - ii. water supplies, metered water supply, hydrant mains tapping
 - iii. pipework including pipes, fittings, valves, supports, hangers, and seals, and
 - iv. mounting structures, signage, brackets, fixings, earthing and bonding.
- c) pressure testing, flow testing, and commissioning
- d) inspection, testing, certification and approvals as required
- e) handling, transport to the Site, and storage on the Site, and

- f) rehandling and transport on the Site, where necessary.

Item 81603 Supply and installation of Gaseous Fire Suppression systems, [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 and installation of gaseous fire suppression systems, including but not limited to:
 - i. gaseous suppression systems including agent storage cylinders, discharge nozzles, actuators, and control equipment
 - ii. emergency warning, detection, actual and control systems
 - iii. safety systems, pressure relief vents
 - iv. pipework including pipes, fittings, valves, supports, hangers, and seals
 - v. control and power cables, cable containment, and reticulation, and
 - vi. mounting structures, signage, brackets, fixings, earthing and bonding.
- c) connection and termination of control and power systems
- d) pressure testing and commissioning
- e) inspection, testing, certification and approvals as required
- f) handling, transport to the Site, and storage on the Site, and
- g) rehandling and transport on the Site, where necessary.

2.2.15 Ticketing and Fare Gates

Item 81621 Supply of Fare Gates [standard access gates | wide access gates], [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 fare gates, including but not limited to:
 - i. structure including gates, pedestal and mounting base
 - ii. operating mechanisms including motors, actuators, hinges and locks
 - iii. control equipment including card readers, audiovisual indicators, controllers, and network interfaces

- iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81622 Supply of Platform Validators, [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 platform validators (previously known as standalone card interface devices), including but not limited to:
 - i. structure including pedestal, housing, and mounting base
 - ii. control equipment including card readers, audiovisual indicators, controllers, and network interfaces
 - iii. power supply equipment including connections, isolators, and circuit protection
 - iv. control and power cables, cable containment, and reticulation, and
 - v. mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81623 Supply of Add Value Vending Machines (AVVMs), [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 add value vending machines, including but not limited to:
 - i. structure including enclosure and mounting base
 - ii. control equipment including card readers, touch screens, displays, keypads, audio systems, controllers and network interfaces
 - iii. payment equipment including EFTPOS and cash handling systems
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.

- c) handling, transport to the Site, and storage on the Site.

Item 81624 Supply of Ticket Office Terminal (TOT), [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 ticket office terminal, including but not limited to:
 - i. terminal equipment including computer, monitor, keyboard, mouse, and displays, as required
 - ii. ticketing equipment including ticket printers or card readers, as required
 - iii. payment equipment including EFTPOS terminals
 - iv. network interfaces including connections to Translink ticketing backend systems
 - v. data and power cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81625 Supply of Station Office Computer (SOC), [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 station office computer, including but not limited to:
 - i. computer, monitor, keyboard, mouse, and peripherals
 - ii. software and operating systems
 - iii. data, control and power cables, cable containment, and reticulation, and
 - iv. mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81626 Installation of Fare Gates [standard access gates | wide access gates], [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) installation of fare gates, including but not limited to:
 - i. structure including gates, pedestal and mounting base

- ii. operating mechanisms including motors, actuators, hinges and locks
 - iii. control equipment including card readers, audiovisual indicators, controllers, and network interfaces
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of control and power cables
 - d) configuration and commissioning including integration with Translink systems
 - e) inspection, testing, and certification as required, and
 - f) rehandling and transport on the Site, where necessary.

Item 81627 Installation of Platform Validators, [*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) installation of platform validators (previously known as standalone card interface devices), including but not limited to:
 - i. structure including pedestal, housing, and mounting base
 - ii. control equipment including card readers, audiovisual indicators, controllers, and network interfaces
 - iii. power supply equipment including connections, isolators, and circuit protection
 - iv. control and power cables, cable containment, and reticulation, and
 - v. mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of control and power cables
- d) configuration and commissioning including integration with ticketing systems
- e) inspection, testing, and certification as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81628 Installation of Add Value Vending Machines (AVVMs), [*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) installation of add value vending machines, including but not limited to:
 - i. structure including enclosure and mounting base
 - ii. control equipment including card readers, touch screens, displays, keypads, audio systems, controllers and network interfaces
 - iii. payment equipment including EFTPOS and cash handling systems
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of control and power cables
- d) configuration and commissioning including integration with Translink systems
- e) inspection, testing, and certification as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81629 Installation of Ticket Office Terminal (TOT), [*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) installation of ticket office terminal, including but not limited to:
 - i. terminal equipment including computer, monitor, keyboard, mouse, and displays, as required
 - ii. ticketing equipment including ticket printers or card readers, as required
 - iii. payment equipment including EFTPOS terminals
 - iv. network interfaces including connections to Translink ticketing backend systems
 - v. data and power cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of data and power cables
- d) configuration and commissioning including integration with Translink systems
- e) inspection, testing, and certification as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81630 Installation of Station Office Computer (SOC), [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) installation of station office computer, including but not limited to:
 - i. computer, monitor, keyboard, mouse, and peripherals
 - ii. software and operating systems
 - iii. data, control and power cables, cable containment, and reticulation, and
 - iv. mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of data and power cables
- d) configuration and commissioning of software and network connections
- e) inspection, testing, and certification as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81631 Supply and installation of Fare Gates [standard access gates | wide access gates], [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 and installation of fare gates, including but not limited to:
 - i. structure including gates, pedestal and mounting base
 - ii. operating mechanisms including motors, actuators, hinges and locks
 - iii. control equipment including card readers, audiovisual indicators, controllers, and network interfaces
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of control and power cables
- d) configuration and commissioning including integration with Translink systems
- e) inspection, testing, and certification as required
- f) handling, transport to the Site, and storage on the Site, and

- g) rehandling and transport on the Site, where necessary.

Item 81632 Supply and installation of Platform Validators, [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 and installation of platform validators (previously known as standalone card interface devices), including but not limited to:
 - i. structure including pedestal, housing, and mounting base
 - ii. control equipment including card readers, audiovisual indicators, controllers, and network interfaces
 - iii. power supply equipment including connections, isolators, and circuit protection
 - iv. control and power cables, cable containment, and reticulation, and
 - v. mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of control and power cables
- d) configuration and commissioning including integration with ticketing systems
- e) inspection, testing, and certification as required
- f) handling, transport to the Site, and storage on the Site, and
- g) rehandling and transport on the Site, where necessary.

Item 81633 Supply and installation of Add Value Vending Machines (AVVMs), [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 and installation of add value vending machines, including but not limited to:
 - i. structure including enclosure and mounting base
 - ii. control equipment including card readers, touch screens, displays, keypads, audio systems, controllers and network interfaces
 - iii. payment equipment including EFTPOS and cash handling systems
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and

- vi. mounting brackets, fixings, earthing and bonding
- c) running, terminating and testing of control and power cables
- d) configuration and commissioning including integration with Translink systems
- e) inspection, testing, and certification as required
- f) handling, transport to the Site, and storage on the Site, and
- g) rehandling and transport on the Site, where necessary.

Item 81634 Supply and installation of Ticket Office Terminal (TOT), [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 and installation of ticket office terminal, including but not limited to:
 - i. terminal equipment including computer, monitor, keyboard, mouse, and displays, as required
 - ii. ticketing equipment including ticket printers or card readers, as required
 - iii. payment equipment including EFTPOS terminals
 - iv. network interfaces including connections to Translink ticketing backend systems
 - v. data and power cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) installation of ticket office terminal
- d) running, terminating and testing of data and power cables
- e) configuration and commissioning including integration with Translink systems
- f) inspection, testing, and certification as required
- g) handling, transport to the Site, and storage on the Site, and
- h) rehandling and transport on the Site, where necessary.

Item 81635 Supply and installation of Station Office Computer (SOC), [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 and installation of station office computer, including but not limited to:
 - i. computer, monitor, keyboard, mouse, and peripherals

- ii. software and operating systems
 - iii. data, control and power cables, cable containment, and reticulation, and
 - iv. mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of data and power cables
 - d) configuration and commissioning of software and network connections
 - e) inspection, testing, and certification as required
 - f) handling, transport to the Site, and storage on the Site, and
 - g) rehandling and transport on the Site, where necessary.

2.2.16 Customer Information and Communication

Item 81651 Supply of Next Train Information (NTI) units [*wall mount* | *pedestal mount*], [*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 next train information units, including but not limited to:
 - i. structure including housing, pedestal, mounting base, or wall plates, as required
 - ii. user interface including buttons, tactile indicators, and speakers
 - iii. control equipment including processors, amplifiers, controllers, and network interfaces
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, data cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81652 Supply of Emergency and Disability Assistance Phone (EDAP) units [*wall mount* | *pedestal mount*], [*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 emergency and disability assistance phone units, including but not limited to:
 - i. structure including housing, pedestal, mounting base, or wall plates, as required
 - ii. user interface including buttons, tactile indicators, speakers, microphones and emergency call buttons
 - iii. control equipment including processors, amplifiers, controllers, and network interfaces
 - iv. power supply equipment including connections, isolators, battery backup, and circuit protection
 - v. control and power cables, data cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81653 Supply of Next Train Information (NTI) / Emergency and Disability Assistance Phone (EDAP) combined units [*wall mount* | *pedestal mount*], [*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 combined next train information units and emergency and disability assistance phone units, including but not limited to:
 - i. structure including housing, pedestal, mounting base, or wall plates, as required
 - ii. user interface including buttons, tactile indicators, speakers, microphones and emergency call buttons
 - iii. control equipment including processors, amplifiers, controllers, and network interfaces
 - iv. power supply equipment including connections, isolators, battery backup, and circuit protection
 - v. control and power cables, data cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81654 Supply of Customer Information Screens (CIS), [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 customer information screens, including but not limited to:
 - i. Customer Information Screens (CIS), Train Information Display Monitors (TIDMs) or Passenger Information Display Screens (PIDS) as applicable
 - ii. digital screens and display equipment
 - iii. control equipment including controllers, processors, and network interfaces
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. data, control and power cables, cable containment, and reticulation, and
 - vi. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81655 Supply of Public Address (PA) systems, [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 public address systems, including but not limited to:
 - i. control equipment including processors and amplifiers
 - ii. interfaces to other systems including emergency warning systems and building management systems
 - iii. field equipment including speakers, enclosures, and mounting hardware
 - iv. operator equipment, including microphones and control consoles
 - v. power supply equipment including connections, isolators, battery backup, and circuit protection
 - vi. control and power cables, cable containment, and reticulation, and
 - vii. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81656 Supply of Hearing Augmentation Loop (HAL) systems, [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 hearing augmentation loop systems, including but not limited to:
 - i. control equipment including processors and amplifiers
 - ii. interfaces to other systems including public address systems and emergency warning systems
 - iii. field equipment including loop cables
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and
 - vi. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81657 Supply of Auracast system, [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 Auracast systems, including but not limited to:
 - i. transmitters and antennas
 - ii. interfaces to other systems including public address systems and emergency warning systems
 - iii. power supply equipment including connections, isolators, and circuit protection
 - iv. control and power cables, cable containment, and reticulation, and
 - v. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81658 Installation of Next Train Information (NTI) units [*wall mount* | *pedestal mount*], [*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) installation of next train information units, including but not limited to:
 - i. structure including housing, pedestal, mounting base, or wall plates, as required
 - ii. user interface including buttons, tactile indicators, and speakers,
 - iii. control equipment including processors, amplifiers, controllers, and network interfaces
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, data cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of control and power cables
- d) configuration and commissioning including integration with external network systems
- e) inspection, testing, and certification as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81659 Installation of Emergency and Disability Assistance Phone (EDAP) units [*wall mount* | *pedestal mount*], [*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) installation of emergency and disability assistance phone units, including but not limited to:
 - i. structure including housing, pedestal, mounting base, or wall plates, as required
 - ii. user interface including buttons, tactile indicators, speakers, microphones and emergency call buttons
 - iii. control equipment including processors, amplifiers, controllers, and network interfaces

- iv. power supply equipment including connections, isolators, battery backup, and circuit protection
 - v. control and power cables, data cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of control and power cables
 - d) configuration and commissioning including integration with external network systems
 - e) inspection, testing, and certification as required, and
 - f) rehandling and transport on the Site, where necessary.

Item 81660 Installation of Next Train Information (NTI) / Emergency and Disability Assistance Phone (EDAP) combined units [*wall mount* | *pedestal mount*], [*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) installation of combined next train information units and emergency and disability assistance phone units, including but not limited to:
 - i. structure including housing, pedestal, mounting base, or wall plates, as required
 - ii. user interface including buttons, tactile indicators, speakers, microphones and emergency call buttons
 - iii. control equipment including processors, amplifiers, controllers, and network interfaces
 - iv. power supply equipment including connections, isolators, battery backup, and circuit protection
 - v. control and power cables, data cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of control and power cables
- d) configuration and commissioning including integration with external network systems
- e) inspection, testing, and certification as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81661 Installation of Customer Information Screens (CIS), [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) installation of customer information screens, including but not limited to:
 - i. Customer Information Screens (CIS), Train Information Display Monitors (TIDMs) or Passenger Information Display Screens (PIDS) as applicable
 - ii. digital screens and display equipment
 - iii. control equipment including controllers, processors, and network interfaces
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. data, control and power cables, cable containment, and reticulation, and
 - vi. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of control and power cables
- d) configuration and commissioning including integration with external network systems
- e) inspection, testing, and certification as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81662 Installation of Public Address (PA) systems, [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) installation of public address systems, including but not limited to:
 - i. control equipment including processors and amplifiers
 - ii. interfaces to other systems including emergency warning systems and building management systems
 - iii. field equipment including speakers, enclosures, and mounting hardware
 - iv. operator equipment, including microphones and control consoles
 - v. power supply equipment including connections, isolators, battery backup, and circuit protection
 - vi. control and power cables, cable containment, and reticulation, and

- vii. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of control and power cables
- d) configuration and commissioning including integration with emergency warning and building management systems
- e) inspection, testing, and certification as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81663 Installation of Hearing Augmentation Loop (HAL) systems, [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) installation of hearing augmentation loop systems, including but not limited to:
 - i. control equipment including processors and amplifiers
 - ii. interfaces to other systems including public address systems and emergency warning systems
 - iii. field equipment including loop cables
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and
 - vi. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of control and power cables
- d) configuration and commissioning including integration with public address and emergency warning systems
- e) inspection, testing, and certification as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81664 Installation of Auracast systems, [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) installation of Auracast systems, including but not limited to:
 - i. transmitters and antennas

- ii. interfaces to other systems including public address systems and emergency warning systems
 - iii. power supply equipment including connections, isolators, and circuit protection
 - iv. control and power cables, cable containment, and reticulation, and
 - v. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of control and power cables
 - d) configuration and commissioning including integration with emergency warning and building management systems
 - e) inspection, testing, and certification as required, and
 - f) rehandling and transport on the Site, where necessary.

Item 81665 Supply and installation of Next Train Information (NTI) units [*wall mount* | *pedestal mount*], [*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 and installation of next train information units, including but not limited to:
 - i. structure including housing, pedestal, mounting base, or wall plates, as required
 - ii. user interface including buttons, tactile indicators, and speakers,
 - iii. control equipment including processors, amplifiers, controllers, and network interfaces
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, data cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of control and power cables
- d) configuration and commissioning including integration with external network systems
- e) inspection, testing, and certification as required
- f) handling, transport to the Site, and storage on the Site, and

- g) rehandling and transport on the Site, where necessary.

Item 81666 Supply and installation of Emergency and Disability Assistance Phone (EDAP) units [*wall mount* | *pedestal mount*], [*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 and installation of emergency and disability assistance phone units, including but not limited to:
 - i. structure including housing, pedestal, mounting base, or wall plates, as required
 - ii. user interface including buttons, tactile indicators, speakers, microphones and emergency call buttons
 - iii. control equipment including processors, amplifiers, controllers, and network interfaces
 - iv. power supply equipment including connections, isolators, battery backup, and circuit protection
 - v. control and power cables, data cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of control and power cables
- d) configuration and commissioning including integration with external network systems
- e) inspection, testing, and certification as required
- f) handling, transport to the Site, and storage on the Site, and
- g) rehandling and transport on the Site, where necessary.

Item 81667 Supply and installation of Next Train Information (NTI) / Emergency and Disability Assistance Phone (EDAP) combined units [*wall mount* | *pedestal mount*], [*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 and installation of combined next train information units and emergency and disability assistance phone units, including but not limited to:

- i. structure including housing, pedestal, mounting base, or wall plates, as required
 - ii. user interface including buttons, tactile indicators, speakers, microphones and emergency call buttons
 - iii. control equipment including processors, amplifiers, controllers, and network interfaces
 - iv. power supply equipment including connections, isolators, battery backup, and circuit protection
 - v. control and power cables, data cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of control and power cables
 - d) configuration and commissioning including integration with external network systems
 - e) inspection, testing, and certification as required
 - f) handling, transport to the Site, and storage on the Site, and
 - g) rehandling and transport on the Site, where necessary.

Item 81668 Supply and installation of Customer Information Screens (CIS),
[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 and installation of customer information screens, including but not limited to:
 - i. Customer Information Screens (CIS), Train Information Display Monitors (TIDMs) or Passenger Information Display Screens (PIDS) as applicable
 - ii. digital screens and display equipment
 - iii. control equipment including controllers, processors, and network interfaces
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. data, control and power cables, cable containment, and reticulation, and
 - vi. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.

- c) running, terminating and testing of control and power cables
- d) configuration and commissioning including integration with external network systems
- e) inspection, testing, and certification as required
- f) handling, transport to the Site, and storage on the Site, and
- g) rehandling and transport on the Site, where necessary.

Item 81669 Supply and installation of Public Address (PA) systems, [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 and installation of public address systems, including but not limited to:
 - i. control equipment including processors and amplifiers
 - ii. interfaces to other systems including emergency warning systems and building management systems
 - iii. field equipment including speakers, enclosures, and mounting hardware
 - iv. operator equipment, including microphones and control consoles
 - v. power supply equipment including connections, isolators, battery backup, and circuit protection
 - vi. control and power cables, cable containment, and reticulation, and
 - vii. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of control and power cables
- d) configuration and commissioning including integration with emergency warning and building management systems
- e) inspection, testing, and certification as required
- f) handling, transport to the Site, and storage on the Site, and
- g) rehandling and transport on the Site, where necessary.

Item 81670 Supply and installation of Hearing Augmentation Loop (HAL) systems, [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 and installation of hearing augmentation loop systems, including but not limited to:
 - i. control equipment including processors and amplifiers
 - ii. interfaces to other systems including public address systems and emergency warning systems
 - iii. field equipment including loop cables
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and
 - vi. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of control and power cables
- d) configuration and commissioning including integration with public address and emergency warning systems
- e) inspection, testing, and certification as required
- f) handling, transport to the Site, and storage on the Site, and
- g) rehandling and transport on the Site, where necessary.

Item 81671 Supply and installation of Auracast systems, [*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 and installation of Auracast systems, including but not limited to:
 - i. transmitters and antennas
 - ii. interfaces to other systems including public address systems and emergency warning systems
 - iii. power supply equipment including connections, isolators, and circuit protection
 - iv. control and power cables, cable containment, and reticulation, and
 - v. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of control and power cables

- d) configuration and commissioning including integration with emergency warning and building management systems
- e) inspection, testing, and certification as required
- f) handling, transport to the Site, and storage on the Site, and
- g) rehandling and transport on the Site, where necessary

2.2.17 Security

Item 81686 Supply of CCTV systems, [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 CCTV systems, including but not limited to:
 - i. display and control equipment including displays, monitors and controllers
 - ii. field equipment including cameras, and housings
 - iii. control equipment including video management systems, storage servers, and network interfaces
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. data, control and power cables, cable containment, and reticulation, and
 - vi. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81687 Supply of Electronic Access Control systems, [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 electronic access control systems, including but not limited to:
 - i. access control devices including card readers, scanners, keypads, and request-to-exit devices
 - ii. door control hardware including electric locks, sensors, closers, and release mechanisms
 - iii. control equipment including access control panels, controllers, processors, and network interfaces

- iv. power supply equipment including connections, isolators, battery backup, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and
 - vi. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81688 Supply of Alarm systems, [*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 alarm systems, including but not limited to:
 - i. field equipment including sensors, detectors, sirens, sounders, strobes, and other visual indicators
 - ii. monitoring equipment including alarm control panels, monitoring stations, and control workstations
 - iii. network interfaces including connections to CCTV systems, access control systems, and remote monitoring centres
 - iv. power supply equipment including connections, isolators, battery backup, and circuit protection
 - v. data, control and power cables, cable containment, and reticulation, and
 - vi. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81689 Supply of Duress Buttons, [*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 duress buttons, including but not limited to:
 - i. duress buttons and mounting plates
 - ii. monitoring equipment including alarm receivers and alert notification systems
 - iii. network interfaces to alarm systems and remote monitoring centres

- iv. power supply equipment including connections, isolators, battery backup, and circuit protection
 - v. data, control and power cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) handling, transport to the Site, and storage on the Site.

Item 81690 Installation of CCTV systems, [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) installation of CCTV systems, including but not limited to:
 - i. display and control equipment including displays, monitors and controllers
 - ii. field equipment including cameras, and housings
 - iii. control equipment including video management systems, storage servers, and network interfaces
 - iv. power supply equipment including connections, isolators, and circuit protection
 - v. data, control and power cables, cable containment, and reticulation, and
 - vi. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of data, control and power cables
- d) configuration and commissioning including integration with security and monitoring systems
- e) inspection, testing, and certification as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81691 Installation of Electronic Access Control systems, [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) installation of electronic access control systems, including but not limited to:
 - i. access control devices including card readers, scanners, keypads, and request-to-exit devices

- ii. door control hardware including electric locks, sensors, closers, and release mechanisms
 - iii. control equipment including access control panels, controllers, processors, and network interfaces
 - iv. power supply equipment including connections, isolators, battery backup, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and
 - vi. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of control and power cables
 - d) configuration and commissioning including integration with security and building management systems
 - e) inspection, testing, and certification as required, and
 - f) rehandling and transport on the Site, where necessary.

Item 81692 Installation of Alarm systems, [*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) installation of alarm systems, including but not limited to:
 - i. field equipment including sensors, detectors, sirens, sounders, strobes, and other visual indicators
 - ii. monitoring equipment including alarm control panels, monitoring stations, and control workstations
 - iii. network interfaces including connections to CCTV systems, access control systems, and remote monitoring centres
 - iv. power supply equipment including connections, isolators, battery backup, and circuit protection
 - v. data, control and power cables, cable containment, and reticulation, and
 - vi. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of data, control and power cables

- d) configuration and commissioning including integration with CCTV, electronic access control, and remote monitoring systems
- e) inspection, testing, and certification as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81693 Installation of Duress Buttons, [*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) installation of duress buttons, including but not limited to:
 - i. duress buttons and mounting plates
 - ii. monitoring equipment including alarm receivers and alert notification systems
 - iii. network interfaces to alarm systems and remote monitoring centres
 - iv. power supply equipment including connections, isolators, battery backup, and circuit protection
 - v. data, control and power cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of data, control and power cables
- d) configuration and commissioning including integration with alarm systems and remote monitoring systems
- e) inspection, testing, and certification as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81694 Supply and installation of CCTV systems, [*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 and installation of CCTV systems, including but not limited to:
 - i. display and control equipment including displays, monitors and controllers
 - ii. field equipment including cameras, and housings
 - iii. control equipment including video management systems, storage servers, and network interfaces
 - iv. power supply equipment including connections, isolators, and circuit protection

- v. data, control and power cables, cable containment, and reticulation, and
 - vi. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of data, control and power cables
 - d) configuration and commissioning including integration with security and monitoring systems
 - e) inspection, testing, and certification as required
 - f) handling, transport to the Site, and storage on the Site, and
 - g) rehandling and transport on the Site, where necessary.

Item 81695 Supply and installation of Electronic Access Control systems, [*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 and installation of electronic access control systems, including but not limited to:
 - i. access control devices including card readers, scanners, keypads, and request-to-exit devices
 - ii. door control hardware including electric locks, sensors, closers, and release mechanisms
 - iii. control equipment including access control panels, controllers, processors, and network interfaces
 - iv. power supply equipment including connections, isolators, battery backup, and circuit protection
 - v. control and power cables, cable containment, and reticulation, and
 - vi. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of control and power cables
- d) configuration and commissioning including integration with security and building management systems
- e) inspection, testing, and certification as required
- f) handling, transport to the Site, and storage on the Site, and
- g) rehandling and transport on the Site, where necessary.

Item 81696 Supply and installation of Alarm systems, [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 and installation of alarm systems, including but not limited to:
 - i. field equipment including sensors, detectors, sirens, sounders, strobes, and other visual indicators
 - ii. monitoring equipment including alarm control panels, monitoring stations, and control workstations
 - iii. network interfaces including connections to CCTV systems, access control systems, and remote monitoring centres
 - iv. power supply equipment including connections, isolators, battery backup, and circuit protection
 - v. data, control and power cables, cable containment, and reticulation, and
 - vi. equipment racks, enclosures, mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of data, control and power cables
- d) configuration and commissioning including integration with CCTV, electronic access control, and remote monitoring systems
- e) inspection, testing, and certification as required
- f) handling, transport to the Site, and storage on the Site, and
- g) rehandling and transport on the Site, where necessary.

Item 81697 Supply and installation of Duress Buttons, [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 and installation of duress buttons, including but not limited to:
 - i. duress buttons and mounting plates
 - ii. monitoring equipment including alarm receivers and alert notification systems
 - iii. network interfaces to alarm systems and remote monitoring centres
 - iv. power supply equipment including connections, isolators, battery backup, and circuit protection

- v. data, control and power cables, cable containment, and reticulation, and
 - vi. mounting brackets, fixings, earthing and bonding.
- c) running, terminating and testing of data, control and power cables
 - d) configuration and commissioning including integration with alarm systems and remote monitoring systems
 - e) inspection, testing, and certification as required
 - f) handling, transport to the Site, and storage on the Site, and
 - g) rehandling and transport on the Site, where necessary.

2.2.18 Stations Miscellaneous

Item 81711 Testing and commissioning of stations, [*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) undertake testing and commissioning activities in accordance with the approved Testing and Commissioning Plan
- c) prepare detailed inspection, test plans and processes covering management and planning of all testing activities
- d) factory acceptance testing
- e) Site acceptance testing
- f) visual inspection of equipment, systems and structures using an approved method
- g) commissioning testing
- h) sub-system testing
- i) sub-system integration testing
- j) system Integration testing
- k) testing integration with all other interfacing networks, systems, equipment
- l) coordinate with rail operations
- m) as-built documentation
- n) handover documentation including test documents, and
- o) reporting to client representative.

Item 81712 Supply of Static Platform Gap Fillers, [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 static platform gap fillers, including but not limited to:
 - i. gap filler strips and profiles made of rubber or other approved polymers, and
 - ii. mounting brackets and fixings.
- c) handling, transport to the Site, and storage on the Site.

Item 81713 Installation of Static Platform Gap Fillers, [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) installation of static platform gap fillers, including but not limited to:
 - i. gap filler strips and profiles made of rubber or other approved polymers, and
 - ii. mounting brackets and fixings.
- c) drilling, fixing and fastening to platform surfaces
- d) alignment and adjustment to specified tolerances
- e) inspection, testing, commissioning, certification and approvals as required, and
- f) rehandling and transport on the Site, where necessary.

Item 81714 Supply and installation of Static Platform Gap Fillers, [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 and installation of static platform gap fillers, including but not limited to:
 - i. gap filler strips and profiles made of rubber or other approved polymers, and
 - ii. mounting brackets and fixings.
- c) drilling, fixing and fastening to platform surfaces
- d) alignment and adjustment to specified tolerances
- e) inspection, testing, commissioning, certification and approvals as required
- f) handling, transport to the Site, and storage on the Site, and
- g) rehandling and transport on the Site, where necessary.

2.3 Measurement

If any item for which a quantity of work is listed in the Schedule of Rates has not been priced by the Contractor, it will be deemed that due allowance has been made in the prices of other items for the cost of the activity which has not been priced.

2.3.1 Measurement of station components

This Specification provides Standard Work Items for:

- a) supply only
- b) installation only, and
- c) supply and installation

of station components.

Any combination of Standard Work Items relating to these methods of measurement may be used in the Schedule of Rates. However, where a Standard Work Item for supply and installation of a particular component or group of components is included in the Schedule of Rates, no supply only nor installation only Standard Work Item shall also apply to that component or group of components, as applicable.

2.3.2 Measurement of signage and wayfinding

This Specification provides Standard Work Items for:

- a) directional signage
- b) facility identification and regulatory information signage
- c) information systems signage, and
- d) primary identification signage

as further defined in the *Signage Manual – Rail Stations*, Department of Transport and Main Roads.

The [*sign type*] field should be completed by referencing the corresponding *sign type* label used in the *Signage Manual – Rail Stations*.

Either consolidated measurement or itemised measurement may be used for directional signage, and facility identification and regulatory information signage

Itemised measurement must be used for information systems signage and primary identification signage

2.3.3 Measurement of fire services

This Specification provides Standard Work Items for fire services at:

- a) open stations, meaning a station which is naturally ventilated and satisfy the following:
 - i. smoke can disperse directly to atmosphere for the length of the platform without accumulation, or
 - ii. the track or platform enclosing structure has permanent open sides for at least 40% of the area of any vertical obstruction, measured from the high point of the roof/canopy structure to the platform finished floor level, for the length of the platform, and
 - iii. note: these stations are typically suburban at-grade single story stations.
- b) enclosed stations, meaning a station where:
 - i. the entire length of tracks, platforms and concourse are enclosed, the only openings being portals for trains and pedestrian entrances, and
 - ii. note: these stations are typically part of a level crossing (e.g., station in a cutting with a deck covering the tracks and platforms).
- c) underground stations, meaning a station where:
 - i. all level including tracks are underground and enclosed except for pedestrian entry points, and
 - ii. note: these stations are typically connected to tunnels and part of a metro subway.

Further definition can be found in Queensland Rail standard MD-24-147 *Fire and Life Safety*.

2.3.4 Measurement of testing and commissioning of stations

Where Standard Work Items for testing and commissioning of stations are not included in the Schedule of Rates for the Contract, the Work Operations associated with that Work Item shall be deemed to be included in the other Work Items included in the Contract.

2.3.5 Unloading, handling, and temporary storage on Site

No separate Standard Work Item shall apply to, and no separate payment shall be made for unloading, multiple handling and temporary storage of materials on the Site described by this Specification and/or the Drawings. Full payment for such activities shall be deemed to be included in the rates for the Standard Work Items included in the Schedule of Rates.

2.4 Calculation of quantities

2.4.1 General

Unless specified otherwise in Clause 2.4, quantities shall be calculated in accordance with the provisions of Clause 2.1.1 of MRS01 *Introduction to Specifications*.

2.4.2 Supply only

Where station materials are supplied only under the Contract (i.e., not installed), the quantity shall be the exact quantity supplied and quantities shall not be rounded in accordance with Clause 2.1.1 of MRS01 *Introduction to Specifications*.

Where station materials are installed only or are supplied and installed under the Contract, the quantity shall be measured in accordance with the remainder of this clause and normal rounding of the final quantity shall apply.

2.4 Removal of existing equipment

The Superintendent will inspect the salvaged materials at the storage Site and will reject any materials which, in the opinion of the Superintendent, have been damaged during the salvage operation. The Contractor shall be required to reimburse the Principal for materials damaged during salvage.

2.5 Station materials supplied by the Principal

2.5.1 Supply of station materials

Where listed in the *Principal Supplied Material List* (Form C7827), station materials shall be supplied by the Principal. Where not so listed, station materials shall be supplied by the Contractor.

2.5.2 Supply location

Station materials supplied by the Principal will be made available at the point of delivery and by the transport mode shown in the *Principal Supplied Material List* (Form C7827).

2.5.3 Time of delivery

The time of delivery shall generally conform to the construction program supplied by the Contractor with its tender.

Should on-Site construction be delayed, the Contractor may be required to accept delivery of the station materials at any time after the programmed date and to store the station materials at no cost to the Principal.

2.5.4 Acceptance of station materials by the Contractor

The Contractor shall check the station materials for quantity and condition upon taking delivery and shall immediately report to the Administrator any defect or deficiency.

Nonconformance

2.5.5 Damage to station materials

In the event of any station materials sustaining damage after the station materials has been accepted by the Contractor or Principal, the station materials shall be set aside until it has been inspected by the Administrator or Principal. Nonconformance The cost of repairs to the damaged station materials and the cost of replacing the rejected station materials shall be borne by the Contractor or manufacturer.

