

# Specialised Data Specifications

## Section 6 – Engineering Detail Survey for Infrastructure Assets

Not GEMS Geo-enabled	
GEMS Geo-enablement Planned	✓
Content GEMS Geo-enabled	

## 6 ENGINEERING DETAIL SURVEY FOR INFRASTRUCTURE AND ASSETS

### 6.1 Scope of Specification

- 6.1.1 The specification covers the capture of infrastructure, asset and topographical features on Defence Properties using surveying techniques. Engineering detail survey is predominantly undertaken by E&IG to collect data of high spatial accuracy ( $\pm 0.05$  m) to create or update E&IG Master Site Plan dataset and in some cases condition appraisal information.
- 6.1.2 This specification will be used when a Major or Minor Work or Activity Request has been issued to undertake an engineering detail survey on a Defence Property.
- 6.1.3 Features captured using engineering detail surveys are listed in Table 6-1.

**Table 6-1 Scope of Data Collected using Engineering Detail Survey**

Feature Descriptions	
Air Conditioning Services	Road Features
Airport Infrastructure	Security Services
Compressed Air Services	Sewerage Services
Communications Networks	Steam Services
Stormwater Drainage	Structures
Electricity Services	Survey Features
Fire Services	Topographic Features
Fuel Services	Traffic Features
Gas Services	Vegetation
Oxygen Services	Water Features
Property Features	Water Reticulation

### 6.2 Deliverables

- 6.2.1 The deliverables shall be defined in the specific survey brief. The following deliverables are likely to be included:
- A dataset containing collected features. This dataset shall meet the Specification for Master Site Plan Datasets (**Section 3**).
  - A digital triangulated terrain model.
  - A survey report stating methods applied, accuracy achieved, discrepancies and including Survey Control diagrams.
  - A Metadata record for each data file.
  - Hard copy survey plan(s) at a scale of 1:500 (as required).

### 6.3 Data Inputs

- 6.3.1 The existing Master Site Plan Dataset shall be used as the basis to conduct and update surveys. The existing Master Site Plan Dataset shall be sought from the relevant E&IG EMOS Contractor.

### 6.4 Deliverable Specification

### 6.4.1 Data Format

6.4.1.1 Digital data can be collected in either GIS or AutoCAD format compatible with the **Section 2** Data Specification. AutoCAD files shall be both provided in both 2D and 3D.

### 6.4.2 Accuracy

6.4.2.1 All surveys shall have a horizontal and vertical accuracy of  $\pm 0.05$  m.

6.4.2.2 For the purposes of establishing the coordinated datum for the As-Constructed survey shall be established using a minimum of 3 control points.

### 6.4.3 Quality Assurance

6.4.3.1 All As-Constructed detail data shall be reviewed by a senior surveyor. The surveyor shall certify completeness, and that accuracy standards detailed in these specifications are achieved.

6.4.3.2 The certification shall include a signed hardcopy plan of the As-Constructed data and a report detailing the Project number, methodology, discrepancies and new control marks.

## 6.5 Specific Data Requirements

### 6.5.1 Survey Control Stations

6.5.1.1 Survey Control Stations are physical marks in the ground which are used by surveyors as a reference location. A Survey Control Station has horizontal coordinates and a vertical height recorded against it.

6.5.1.2 Survey Control Stations, or Defence Facilities Reference Points (DFRP), stored with WGS-84 and or GDA94/GDA2020 compliant coordinates are available at most Defence Properties and shall be used as the co-ordinate origin for all survey work undertaken for and on behalf of E&IG.

6.5.1.3 Where suitable Survey Control Stations are not available in the area to be surveyed, or there is a possibility that an existing Survey Control Station may be disturbed/destroyed due to construction, a Survey Control Station shall be established by the surveyor to the following ICSM Standards:

- Horizontal Control shall be established to Class B, equivalent to Order 2; and
- Vertical Control shall be established to Class LC, equivalent to Order L3 for differential levelling and Class C, equivalent to Order 3 for GPS height.

6.5.1.4 Survey Control Stations shall not be located on sandstone walls, tree trunks or other sensitive areas. Any paint used shall be a removable water based type. With placement of new Survey Control Station, the surveyor shall take into account the possibility of disturbance by mowers or other vehicular traffic.

6.5.1.5 New Survey Control Stations shall be listed on a Survey Control diagram that includes a locality sketch, the type of stabilisation, coordinates of the

control and the Reduced Level (RL). The diagram shall be attached to the Survey Report.

6.5.1.6 New Survey Control Stations shall be included in an update to the Master Site Plan Dataset.

## 6.5.2 Continuously Operating Reference Station (CORS) Networks

6.5.2.1 A CORS is a network of global navigation satellite reference stations that will provide code range and carrier phase data to users. CORS are managed across Australian States and Territories by state government and private organisations.

6.5.2.2 A CORS network within the vicinity of the Defence Property can be used to collect engineering detail survey.

## 6.5.3 Topographical Information

6.5.3.1 Ground survey of the natural surface shall be undertaken to a vertical accuracy of  $\pm 0.05$  m over the entire site.

6.5.3.2 The grid spacing shall be approximately 25 m. This spacing can be increased by the surveyor if warranted by the terrain, providing the accuracy limits are maintained and the changes of grade are surveyed.

6.5.3.3 All topographical features shall be correctly strung to ensure accurate modelling.