GEOSPATIAL ENGINEERING COMPETENCIES

Core Geospatial Competencies

Which Underpin the Chosen Specialism

Revision 2018:
Security mindedness added to GE CORE 02E

The measurement, definition and portrayal, either digitally or graphically in the form of maps or plans, of the physical features of, and the structures on the earth's surface. The ability to understand engineering design information and from this, provide dimensional control for all stages of construction work.

Revision February 2018

GECORE01		**Competency**	**Project specification and brief**				
				Date of assessment			
	Optimum Standard		**Activity Details**	A	K	E	B
ITEM	**TECHNICAL MEMBER**	**MEMBER**					
A	All E	All B	1. Analysis of client requirements 2. Development and/or interpretation of project specification or brief 3. Agree and/or develop project deliverables 4. Define and/or recommend, then adopt, appropriate data standards e.g. RICS, PAS128, BS1192				

GECORE01: Project specification and brief	
Name of Supervisor	Name of Applicant
Supervisor's signature	Date

GECORE02		**Competency**	**Spatial data**				
				Date of assessment			
	Optimum Standard		**Activity Details**				
ITEM	**TECHNICAL MEMBER**	**MEMBER**		A	K	E	B
A	1 at E, 1 at K rest at A	1 at B, 1 at E rest at A	**Data Creation** 1. Scanning including laser scanning 2. Surveying methods to be adopted 3. GNSS and its benefits over other methods 4. Remote Sensing 5. Other - please specify:				
B	1 at B, 1 at E rest at K	2 at B, 1 at E rest at K	**Data Processing** 1. Data abstraction, classification, selection 2. Data formats e.g. DXF, DGN, DWG 3. ETL (extract, transform, load) e.g. DWG to Shapefile 4. Computation including an understanding of trig. and traverse computations 5. Other - please specify:				
C	1 at E, rest at K	2 at B, rest at K	**Data representation** 1. 2D or 3D representation/model 2. PDF or similar output 3. Textual e.g. metadata, schedules 4. Paper e.g. contract drawings, CPO drawings				

GECORE02 continued		**Competency**	**Spatial data**				
				Date of assessment			
	Optimum Standard		**Activity Details**	A	K	E	B
ITEM	**TECHNICAL MEMBER**	**MEMBER**					
D	2 at E, rest at K	2 at B, rest at K	**Quality Control** 1. Appropriate on-going checking procedures 2. Problems of currency or source e.g. old data, 3. Verification of survey data – field 4. Verification of data - office 5. Other - please specify:				
E	1 at E, rest at K	1 at E, rest at K	**Data Management** 1. BIM, including the security implications of this and similar management tools 2. Version control 3. Archiving e.g. retention schedule 4. Digital licences i.e. who owns the survey data, copyright issues 5. Other - please specify:				

GECORE02 continued		**Competency**	**Spatial data**				
				Date of assessment			
	Optimum Standard		**Activity Details**	A	K	E	B
ITEM	**TECHNICAL MEMBER**	**MEMBER**					
F	1 at E, rest at K	1 at E, rest at K	**Quality Assurance** 1. Adhere to internal procedures 2. Quality Management Systems ISO 9001 Certification 3. Other - please specify:				

GECORE02: Spatial data	
Name of Supervisor	Name of Applicant
Supervisor’s signature	Date

GECORE03		**Competency**	**Geospatial data referencing**				
				Date of assessment			
	Optimum Standard		**Activity Details**	A	K	E	B
ITEM	**TECHNICAL MEMBER**	**MEMBER**					
A	1 at E, rest at A	1 at B, rest at K	**Geo-referencing Systems** 1. Geographic coordinate systems e.g. latitude & longitude, GNSS systems 2. Rectilinear coordinate systems e.g. Cartesian coordinate systems and national / international systems. 3. Linear referencing systems e.g. rail or pipeline chainage 4. Principles and use of scale factors, earth curvature effects 5. Coordinate conversions e.g. Cartesian to geographic and vice versa 6. Other - please specify:				
B	Both at E	Both at B	**Datums** 1. Datums and an understanding of the different origin of horizontal and vertical control e.g. GNSS 2. Datum transformation methods and their pros and cons e.g. shift, conformal 7 parameter				

GECORE03 continued		**Competency**	**Geospatial data referencing**				
				Date of assessment			
	Optimum Standard		**Activity Details**	A	K	E	B
ITEM	**TECHNICAL MEMBER**	**MEMBER**					
C	1 at E, rest at A	1 at B, rest at K	**Geodesy** 1. Map projections e.g. Mercator 2. Scale factors – when to apply and impact of 3. Other - please specify:				

GECORE03: Geospatial data referencing	
Name of Supervisor	Name of Applicant
Supervisor’s signature	Date

GECORE04		**Competency**	**Cartography**				
				Date of assessment			
	Optimum Standard		**Activity Details**	A	K	E	B
ITEM	**TECHNICAL MEMBER**	**MEMBER**					
A	1 at E, rest at K	1 at E, rest at K	1. Presentation i.e. use of type face, no overwriting 2. Scale & generalisation i.e. correct scale for the job 3. Colour, Typography, Symbology 4. Other - please specify:				

GECORE04: Cartography	
Name of Supervisor	Name of Applicant
Supervisor’s signature	Date

GECORE05		**Competency**	**ICT within geospatial engineering**				
				Date of assessment			
	Optimum Standard		**Activity Details**	A	K	E	B
ITEM	**TECHNICAL MEMBER**	**MEMBER**					
A	2 at K rest at A	1 at E, rest at K	1. CAD software e.g. AutoCAD, TurboCAD, Vectorworks 2. GIS software e.g. MapInfo, ArcInfo 3. Hydrographic Modelling 4. Use of 3D design data 5. Survey data processing packages 6. Relational databases 7. Other - please specify:				

GECORE05: ICT within geospatial engineering	
Name of Supervisor	Name of Applicant
Supervisor's signature	Date

GECORE06		**Competency**	**Demonstrate an appreciation and general awareness of other geospatial engineering techniques**				
				Date of assessment			
	Optimum Standard		**Activity Details**	A	K	E	B
ITEM	**TECHNICAL MEMBER**	**MEMBER**					
A	A	A	Land Surveying				
B	A	A	Measured Building Surveying				
C	A	A	Engineering Surveying e.g. setting out, machine control, volume calculations				
D	A	A	Use of GNSS e.g. land surveying or machine control				
E	A	A	Hydrographic Surveying				
F	A	A	Photogrammetry, Laser Scanning and Remote Sensing				
G	A	A	Utility Surveying				

GECORE06 continued		**Competency**	**Demonstrate an appreciation and general awareness of other geospatial engineering techniques**				
				Date of assessment			
	Optimum Standard		**Activity Details**	A	K	E	B
ITEM	**TECHNICAL MEMBER**	**MEMBER**					
H	A	A	Geographic Information Systems (GIS)				
I	A	A	Other - please specify:				

GECORE06: Demonstrate an appreciation and general awareness of other geospatial engineering techniques	
Name of Supervisor	Name of Applicant
Supervisor’s signature	Date

GECORE07		**Competency**	**Risk and spatial data**				
				Date of assessment			
	Optimum Standard		**Activity Details**	A	K	E	B
ITEM	**TECHNICAL MEMBER**	**MEMBER**					
A	A	A	Understand the Health and Safety consequence of spatial data accuracy e.g. understanding what stated scale accuracy means in relation to buried services				
B	K	K	Environmental Management Systems ISO 14001 Certification				
GECORE07: Risk and spatial data							
Name of Supervisor			Name of Applicant				
Supervisor’s signature			Date				