

Annexure -6

The specifications mentioned herein below are indicative in nature. Equivalent or higher specifications acceptable to NKDA

RDBMS Specification			
	Annual Technical support required only for five years. Licenses should be processor perpetual and full use in nature. RDBMS offered should be OGC certified.	Compliance (Y / N)	Remarks, if any
1.	Spatial :		
	<ul style="list-style-type: none"> ○ The RDBMS must provide a spatial option that provides advanced spatial features to support high-end GIS and LBS solutions. 		
	<ul style="list-style-type: none"> ○ Should provide native storage, querying, and retrieval for 3-dimensional (3D) data including points, lines, surfaces, triangulated irregular Pnetworks (TINs - an alternative to rasters), and point clouds. 		
	<ul style="list-style-type: none"> ○ Should provide Web services platform to access, incorporate, publish, and deploy geospatial services, such as for routing, geocoding, business directory, catalog, geospatial feature, and mapping 		
	<ul style="list-style-type: none"> ○ Ability to perform precise length, area, and distance calculations on geodetic data, taking into account curvature of the earth. Essential for tracking/routing applications over the poles. 		
	<ul style="list-style-type: none"> ○ Server-based spatial analysis capabilities (classification, binning, association, spatial correlation) essential for business intelligence applications. 		
	<ul style="list-style-type: none"> ○ Generates latitude/longitude (points) from address using international addressing standardization. 		
	<ul style="list-style-type: none"> ○ RDBMS architecture should include partitioning, in which a single logical table and its indexes are broken up into one or more physical tables, each with its own index. Spatial indexes associated with partitioned tables can be partitioned. 		
	<ul style="list-style-type: none"> ○ Spatial indexes and index partitions can be created in parallel. R-tree index creation can be subdivided into smaller tasks that can be performed in parallel, making use of unused hardware (CPU) resources. 		
	<ul style="list-style-type: none"> ○ Spatial queries can now run in parallel on partitioned spatial indexes, improving the performance of "within distance", "nearest neighbour", and "relate" queries. 		
	<ul style="list-style-type: none"> ○ Advanced Replication capabilities should be available for location data. For example, distributed systems that involve geographically dispersed yet logically replicated web sites, can take advantage of synchronized replication of spatial data objects across multiple databases. 		

	<ul style="list-style-type: none"> Vendor must be a principal Member of the Open Geospatial Consortium (OGC) and participate actively on the Technical Committee. RDBMS vendors must be committed to supporting the new OGC Geographic Markup Language (GML) as well as Open Location Service interfaces. The object-relational model used for geometry storage by the RDBMS must also conform to the specifications associated with SQL92 representation of points, lines, and polygons. 		
	<ul style="list-style-type: none"> RDBMS must supports the SQL/MM types and operators, as specified in ISO 13249-3, Information technology - Database languages - SQL Multimedia and Application Packages - Part 3: Spatial. Operators corresponding to those defined in this standard, as well as the SDO_NN and SDO_WITHIN_DISTANCE operators should be able to be used on data stored in the SQL Multimedia root type. 		
	<ul style="list-style-type: none"> The RDBMS must be available on multiple platforms including flavors of Windows, Unix and Linux. 		
	<ul style="list-style-type: none"> The Data must be portable between multiple platforms online including complete table spaces. 		
	<ul style="list-style-type: none"> The RDBMS must provide the capability to correcting Human Errors by quickly rewinding the database to a previous point in time. 		
	<ul style="list-style-type: none"> The RDBMS must have the capability to allow access to a single database from multiple servers on a cluster, insulating both applications and database users from server failures, if required. (Active-Active clusters without partitioning the database). 		
	<ul style="list-style-type: none"> The RDBMS with come with an ETL tool packaged along with, for integration requirements. 		
	<ul style="list-style-type: none"> The RDBMS must provide an integrated management solution for managing the database with a unique top-down application management approach. It must optionally provide managements packs with self-managing capabilities, eliminating time-consuming, error-prone administrative tasks, so database administrators can focus on strategic business objectives instead of performance and availability fire drills. 		
	<ul style="list-style-type: none"> RDBMS should support fast incremental back-ups. 		
	<ul style="list-style-type: none"> RDBMS must optionally provide capabilities to restrict the Data even from the DBA/ Super User 		
	<ul style="list-style-type: none"> The RDBMS must optionally provide advanced compression capabilities. 		

Specifications for Back-up software:

Back-up software			
	Specification	Compliance (Y / N)	Remarks, if any

	<ul style="list-style-type: none"> ○ The back-up software should be able to do On-line Back-up for application and the required agents needs to be included as a part of this proposal 		
	<ul style="list-style-type: none"> ○ Built-in centralized, policy driven management feature by which all Backup servers can be managed from central location. 		
	<ul style="list-style-type: none"> ○ SAN support on above mention OS. Capable of doing LAN free backups for all platforms mentioned above. 		
	<ul style="list-style-type: none"> ○ Capable of reorganizing the data onto tapes within the library by migrating data from one set of tapes into another, so that the space available is utilized to the maximum. 		
	<ul style="list-style-type: none"> ○ Web based administration and be capable of controlling different locations' backup servers from a single console without the use of Enterprise Systems Management products. 		
	<ul style="list-style-type: none"> ○ The backup software must be capable of creating multiple copies of the data at the same time the primary copy generated. 		
	<ul style="list-style-type: none"> ○ The backup software must include encryption of the backed up data or archived data. 		
	<ul style="list-style-type: none"> ○ The Backup software must include open API to enable integration with other enterprise applications. 		
	<ul style="list-style-type: none"> ○ Ability to perform "Hot-Online" backup for different type of Databases such as DB2, Oracle, MS SQL, etc. on various platforms. Such as Linux, AIX, Windows, Solaris, HP-UX. 		
	<ul style="list-style-type: none"> ○ Should support clustered configurations of the backup application in a cluster. I.e. backup application should failover as a highly available resource in a cluster. 		
	<ul style="list-style-type: none"> ○ Inbuilt feature for Tape to tape copy feature (cloning, within the tape library) to make multiple copies of the tapes without affecting the clients for sending tapes offsite as part of disaster recovery strategy. 		
	<ul style="list-style-type: none"> ○ Should have the ability to configure retries for backups of a client in case the client is not available on the network due to reboot or network failures. The backup software must have the ability to continue from where the backup/restore failed, and not start the activity from scratch. 		
	<ul style="list-style-type: none"> ○ Should support (Role Based Access) different levels of User access, Administrator, User, Operator, so that only the authorized personnel can make changes or view the status based on the rights they have. 		
	<ul style="list-style-type: none"> ○ The Software must also provide for creating a Disaster Recovery Plan or DRP in case of the Backup server and all other servers in the backup network being destroyed in a possible disaster. This should be a scheduled and automated activity on the backup server. 		
	<ul style="list-style-type: none"> ○ The backup software must support System Image backup 		

	for Bare Machine Recovery of Operating System.		
--	--	--	--

Specification for Enterprise GIS Software

Enterprise GIS Software			
	Specification	Compliance (Y / N)	Remarks, if any
	<ul style="list-style-type: none"> A single gateway to access geo-spatial data content for NKDA access to data and imagery. 		
	<ul style="list-style-type: none"> Capability of the geo-portal to handle data storage, retrieval and update. 		
	<ul style="list-style-type: none"> Comprehensive inter-operable Service Oriented Architecture (SOA) to deliver GI. 		
	<ul style="list-style-type: none"> Server based technology built on modern Enterprise class architecture. 		
	<ul style="list-style-type: none"> Support JSR-168 Java specification. 		
	<ul style="list-style-type: none"> Support scalability, third party integration and business logic development through JAVA/J2EE or any compatible platform. 		
	<ul style="list-style-type: none"> Support various platforms (Windows, Linux, Solaris etc.). 		
	<ul style="list-style-type: none"> Support the latest OGC Geographic Markup Language (GML) as well as OGC Standard Interface. 		
	<ul style="list-style-type: none"> All OGC based Services to OGC Standard compliant. 		
	<ul style="list-style-type: none"> Geo-portal to be capable of automatically creating/harvesting, metadata, footprints and thumbnails. Metadata to be compliant to OGC-CSW. It should also support interfaces and APIs for plug data recorders, Plug metadata parsers, manage the index and customs, search criteria, build and manage pyramids and thumbnails, search catalogue services (CSW), Gazetteer service and configure styles (SLD). 		
	<ul style="list-style-type: none"> It must have a 3D interface to draping raster imagery and vector data, which can be shared among other user and also should provide a collaboration tool with remote user. 		
	<ul style="list-style-type: none"> Should support authentication compatible to many IT standard technologies like Active Directory, LDAP, Database, CAS etc. 		

	<ul style="list-style-type: none"> Web map service (WMS) for provision of maps (Spatial data with colours, styles, legends, annotation etc). 		
	<ul style="list-style-type: none"> Web Feature Service (WFS/GML) for upload/download of OGC's GML data (2.1.2 or higher specification). 		
	<ul style="list-style-type: none"> CSW for enabling data/service providers to register their datasets/services onto clearing house. 		
	<ul style="list-style-type: none"> WCS for sharing coverage from database server. 		
	<ul style="list-style-type: none"> Support standard database like Oracle Spatial, SQL, PostGIS etc. 		
	<ul style="list-style-type: none"> Follow OGC and ISO concepts to standardise geo-spatial information and metadata. 		
	<ul style="list-style-type: none"> Search/locate geo-spatial data-metadata services. 		
	<ul style="list-style-type: none"> Centralised security. 		
	<ul style="list-style-type: none"> Capture, create, edit digitize, maintain and analyse the spatial and non-spatial data for planning. Also to create dynamic links to documents, websites etc. 		
	<ul style="list-style-type: none"> Download geo-spatial datasets from database following IT security standards. 		
	<ul style="list-style-type: none"> Capable of serving tens of terabytes of data with speed and accuracy. 		
	<ul style="list-style-type: none"> Support of OGC-WTS (3D), OGC-WM Context and SVG. 		
	<ul style="list-style-type: none"> Accessibility for customization. 		
	<ul style="list-style-type: none"> Client side styling and swiping tools should be provided for improving visual check. 		
	<ul style="list-style-type: none"> Support functionalities like create, edit, delete features, band combination, stretching colouring, change detection, image filtration, Ortho-on-the fly projection and mosaic, generation of pyramids, foot-print management, metadata editing user interface, data provisioning and styling, spatial modelling and analysis. 		
	<ul style="list-style-type: none"> Security service built on J2EE specification or equivalents. 		
	<ul style="list-style-type: none"> Fine grain security and management for authorisation. 		
	<ul style="list-style-type: none"> Read, Write, Update, Delete, Manage. 		

	<ul style="list-style-type: none"> • Spatial security for WCS requests and scale-based security for WMS requests. 		
	<ul style="list-style-type: none"> • The administrator to set permissions and restrictions depending on the data and type of user. 		
	<ul style="list-style-type: none"> • To be able to read practically from any imagery format (ECW, JPG2000), TIFF, IMG, etc.). In addition, file-based images it can read and serve images stored in the database Oracle GeoRaster and/or ESRI ArcSDE Raster) or equivalent. It also to read and serve the vector data that are stored as ESRI's shape files, MID/MIF, and/or GML on a file system. Ensure hosting of all the vector data stored in the database using Oracle Spatial Database or PostGIS database. 		
	<ul style="list-style-type: none"> • An administrator should be able to offer updating feature and vector data through the Transactional WFS (WFS-T) interface. 		
	<ul style="list-style-type: none"> • Provision for an automated service management system to reduce administrator's load whenever there is a new set of data added to the data store and to allow administrator to deliver different types of geospatial data from varied sources to huge list of end-users. 		
	<ul style="list-style-type: none"> • Should have features for polygon masking. 		
	<ul style="list-style-type: none"> • Catalogue service based on EB Rim Profile (CSW)(OGC/ISO) for search, insert, update and retrieve catalogued data. 		
	<ul style="list-style-type: none"> • ECWP support for lossless data compression. 		
	<ul style="list-style-type: none"> • Clip, zip and ship functionalities. 		
	<ul style="list-style-type: none"> • Should directly read and serve image types like ECW, PNG, JPEG2000 and TIFF and support for multiple coverage data and output formats. 		
	<ul style="list-style-type: none"> • To enable consumption of data into a variety of client applications. 		
	<ul style="list-style-type: none"> • To allow interactive communication and collaboration within a network of users/communities. 		
	<ul style="list-style-type: none"> • Support for sensor metadata. 		
	<ul style="list-style-type: none"> • Support for co-ordinate transforms and user definable datum and projection. 		

	<ul style="list-style-type: none">• Provide massive data support.		
	<ul style="list-style-type: none">• Should run on an Open Source Application Servers like JBOSS.		
	<ul style="list-style-type: none">• Very Fast Massive Imagery Delivery via ECWP.		
	<ul style="list-style-type: none">• The system to allow at least 500 concurrent users to log in less than 10 sec. each.		
	<ul style="list-style-type: none">• Support massive volumes and sizes of datasets.		
	<ul style="list-style-type: none">• Very fast image delivery-ECWP and JPP both.		
	<ul style="list-style-type: none">• To publish and serve through multiple protocols like ECWP and OGC web services.		
	<ul style="list-style-type: none">• Additional support for KML and Geo RSS output formats for most of the services.		
	<ul style="list-style-type: none">• Should have geo-processing capabilities including server side geo-processing for publishing spatial model via OGC-WPS Services.		
	<ul style="list-style-type: none">• Support all versions and levels of GML.		