

ANNEX: First desk research: Overview of possible GNS elements

Element	Possible indicators	Remark
Physical dimensions		
Waterway links	Targeted length, width, depth, air draught for vessels (CEMT classification)	Reference water levels apply; Other targets than CEMT might be relevant;
Locks	Maximum available length, width, depth, air draught	The lock may consist of several chambers; the values need to refer to the chambers
Bridges	Available air clearance for vessels; available fairway width under bridge	Mainly relevant for container transports (2,3,4,5 layers)
Availability of physical infrastructure over time		
Waterway links	Score on targeted length, width, depth, air draught for vessels (CEMT classification)	Especially for free-flowing and tidal river sections, the scores are very dynamic; Information on the reference water levels and the hydrological situation are essential
Waterway links	Duration, frequency and reason of closures of the waterway section	Closures due to natural circumstances (e.g. high water, ice) or man-made (e.g. maintenance works, accidents, events)
Locks	Regular service times (schedule) and occurrence of disruptions possibly specified by the time of year	For example 24/7 operation. Disruptions to be specified by man-made or natural causes
Bridges	Regular service times (schedule) and occurrence of disruptions	Differentiation by fixed bridges and their air clearance Disruptions to be specified by man-made or natural causes
Vulnerability of network elements	Additional travel time via alternative route in case of closure, possibility to use alternative lock chambers	Vulnerable parts in the network require higher standards as regards the reliability and capacity
Intensity/Capacity issues		
Waterway links	Average waiting times or number of vessels waiting in case of single lane waterway configuration	
Locks	Average number of vessels waiting; average waiting time at lock complex; average lock cycle time; average capacity utilisation of lock complex (m2)	There are heterogeneous measurements and calculation methods in Europe
	RIS supported lock planning	Slot planning (e.g. CORISMA)
Bridges	Average number of vessels waiting; average waiting time before bridge opening; possible slot planning	
Administrative processes in relation to efficiency of inland navigation		
Waterway link	Waiting time at border crossings	e.g. at border crossing with non-EU countries
Ports	Waiting time in ports	e.g. for administrative formalities
Electronic Reporting	Availability of electronic (international) data exchange systems	Reference to EU Regulation 164/2010; ERINOT, PAXLIST, BERMAN

Quantity and quality of information to users (RIS)¹		
Waterway dimensions	Water level forecast at links, bridges, locks	Density of measurement points and reliability of forecast in relation to days
	Availability and quality of electronic maps (inland ECDIS)	
Waterway availability	Timeliness of notification of planned closures	e.g. due to maintenance / construction, planned events
	Timeliness of notification of unplanned closures	In case of accidents, sudden breakdowns,
	Ice messages and high water	Causing closures of waterways
Facilities along waterways and in ports		
Multimodal facilities	Terminal capacity (bulk & container) Quality of connections to road/rail/sea	Link to article 15.1 and other TEN-T guideline articles (e.g. 27-29)
Mooring places	Available mooring places for staying overnight, advance booking options	e.g. CORISMA, possibly differentiated to cruise vessels, dangerous cargo
Fresh water, waste disposal	Available locations for reception of ship-waste and fresh water replenishment	Link to Directive 2000/59/EC
Internet access	Coverage and costs of access to Internet (4G, 3G, WiFi) along the waterway	For getting access to information on fairway conditions, transmitting ETA info, etc.
Bunkering facilities	For regular gas-oil fuel and also for alternative fuels (e.g. LNG).	Link to Clean Power for Transport package
Shore power facilities	Capacity and density of connection points and price to be paid for shore power	Link to Clean Power for Transport package
Waterway management		
Maintenance plan	Is there a fairway maintenance plan and is the actual maintenance also executed on schedule according to a plan?	Definition of a quality maintenance plan (proactive, flexible, transnational...)?
	Implementation of maintenance plan	Is the plan executed accordingly?
	Level of international coordination of maintenance works and planning	What levels can be distinguished, formal, informal coordination?
	Formal consultation of users	e.g. about planning and desired maintenance works
	Part of Waterway Asset Management System	Transnational?
Marking plan	Existence of a fairway marking plan	Transnational?
Incident management / emergency response		
Dredging	Reaction time in emergency situations	e.g. after period of high water with lots of sedimentation in the river bed
Ice breaking	Reaction time to resolve ice	For timely response to ice on the waterways
Marking	Reaction time in emergency situations (fairway marking)	
Repair	Reaction time in emergency situations (repair of fairway-related infrastructure)	
Adapted traffic regulations	Reaction time in emergency situations (traffic regulations for safety)	e.g. after accidents

¹ Reference to EU regulations 909/2013 (Inland ECDIS), 416/2007 (Notices to Skippers)