



WP5: Integrated Logistics

GIS Display & Overview

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- GIS Model Integration
- GIS Tools Overview
- Model Format and Usability
- GIS Model Outputs

GIS Model Integration

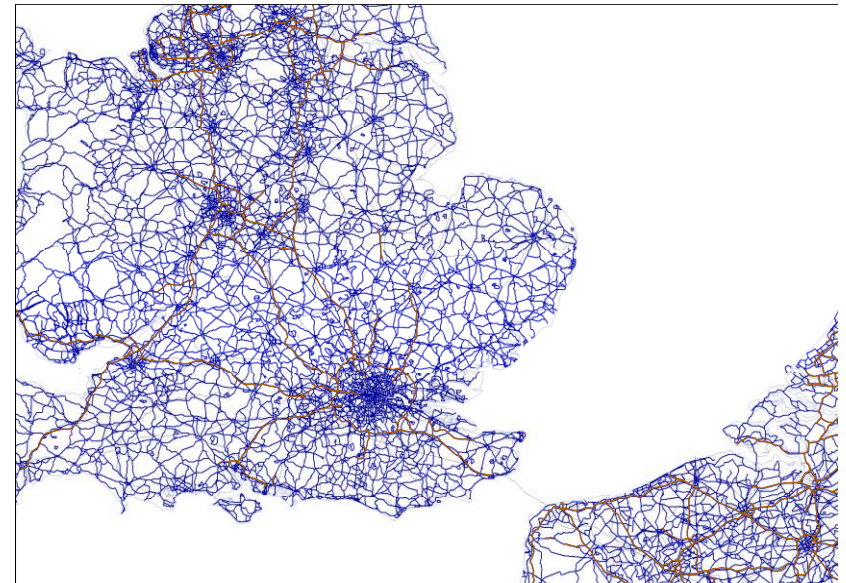
- What is GIS? Geographical Information System
- The GIS tool & Deliverable 5.7 Holistic supply chain optimisation model
 - To display the data evaluated in deliverable 5
 - Quantities, Time frames, Flow rates
 - Warehouses, Manufactures, Plants, Suppliers and Ports
 - To display and utilise port databases and decision matrices compiled and evaluated by Hull and T5.3
 - To graphically display the optimised data outputs from the Portsmouth models and T5.5.

GIS Tools Overview

- A database with geographical information for the display of WP 5 data and assigned attributes to each of these layers
- GIS LEANWIND Tool Kit developed in QGIS
 - Land Routing
 - Shipping
 - Port Selection
 - Traffic Flow
 - Rapid Estimation

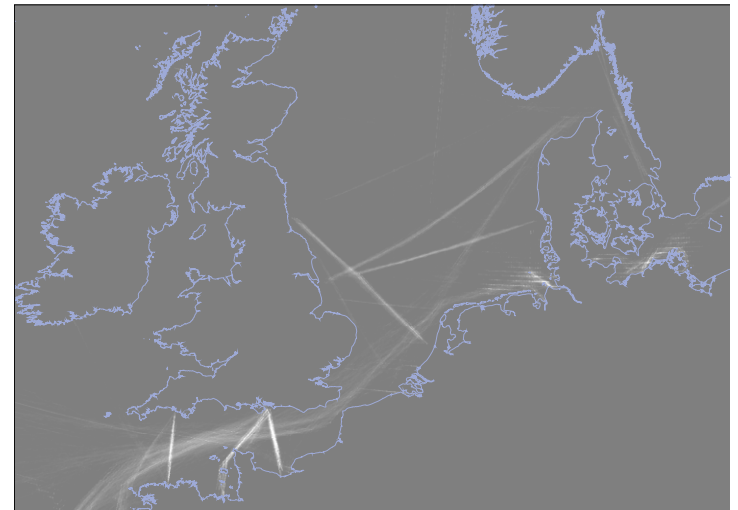
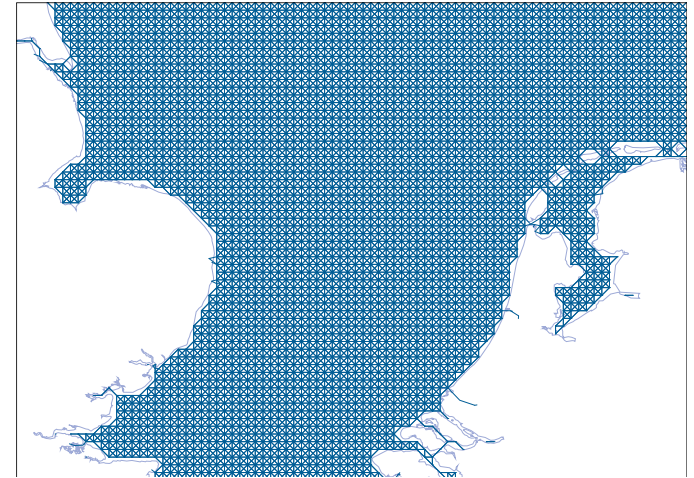
GIS Tools Overview

- Land Routing
 - Operates with a series of Routing Options: Rail, Road, Minor Road
 - Favourability for continuous routes and major road networks
 - Rail routing can also be selected
 - Start & end point Inputs



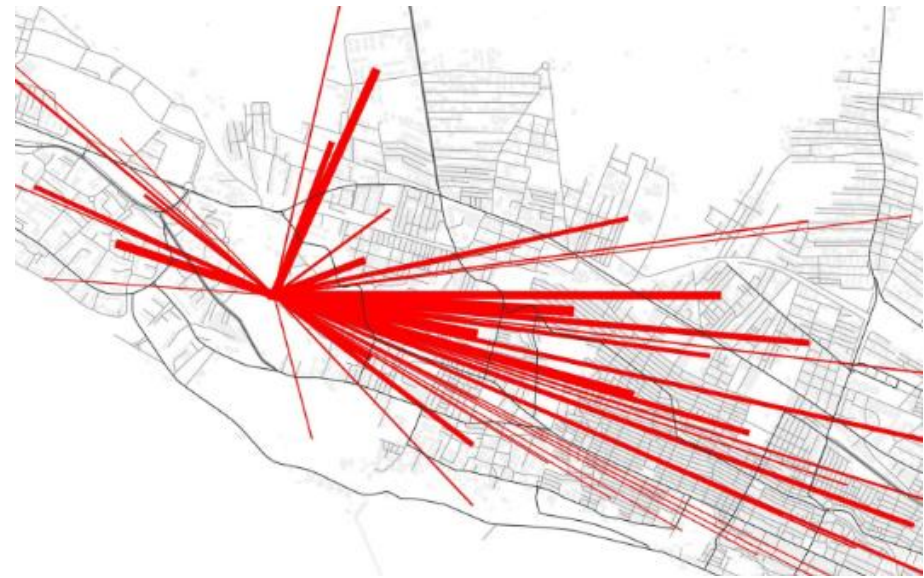
GIS Tools Overview

- Shipping
 - Operates on a two part system
 - Navigational grid
 - Naval shipping density data
 - Weighted % 50/50 for equal parts speed and established routes
 - Start & end point Inputs



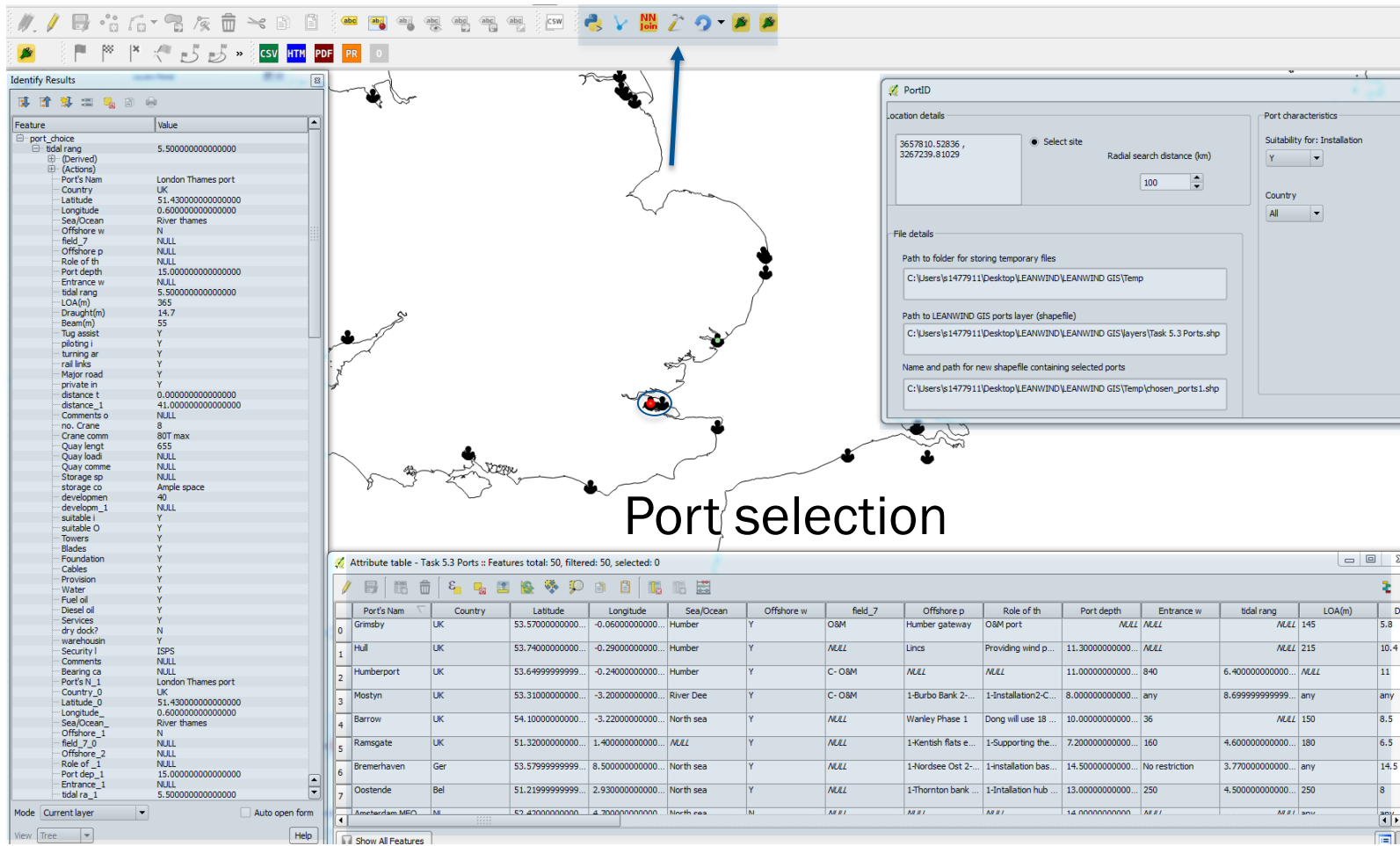
GIS Tools Overview

- Developed in QGIS
 - Developed to be User defined and friendly
 - GUI Click boxes
 - Accompanying Help how to guide
 - The integration of Flow Mapper tools to illustrate the flow and density of components flow traffic along routes



QGIS Flow Mapper (QGIS Model Example)

GIS Tools Overview



Identify Results

Feature	Value
port_choice	
tidal rang	5.500000000000000
Derived	
Actions	
Port's Nam	London Thames port
Country	UK
Latitude	51.430000000000000
Longitude	0.600000000000000
Sea/Ocean	River thames
Offshore w	N
field_7	NULL
Offshore p	NULL
Role of th	NULL
Port depth	15.000000000000000
Entrance w	NULL
tidal rang	5.500000000000000
LOA(m)	365
Draught(m)	14.7
Beam(m)	55
Tug assist	Y
plotting	Y
turning ar	Y
rail links	Y
Major road	Y
private in	Y
distance t	0.000000000000000
distance_1	41.000000000000000
Comments o	NULL
no. Crane	8
Crane comm	80T max
Quay lengt	655
Quay load	NULL
Quay comme	NULL
Storage sp	NULL
storage co	Ample space
developem	40
developm_1	NULL
suitable i	Y
suitable O	Y
Towers	Y
Blades	Y
Foundation	Y
Cables	Y
Provision	Y
Water	Y
Fuel oil	Y
Diesel oil	Y
Services	Y
dry dock?	N
warehouse	Y
Security	Y
Comments	NULL
Bearing ca	NULL
Port's N_1	London Thames port
Country_0	UK
Latitude_0	51.430000000000000
Longitude_0	0.600000000000000
Sea/Ocean_1	River thames
Offshore_1	N
field_7_0	NULL
Offshore_2	NULL
Role of_1	NULL
Port dep_1	15.000000000000000
Entrance_1	NULL
tidal ra_1	5.500000000000000

PortID

location details

3657810.52836 , 3267239.81029

Select site

Radial search distance (km)

100

Port characteristics

Suitability for: Installation

Y

Country

All

File details

Path to folder for storing temporary files

C:\Users\p1477911\Desktop\LEANWIND\LEANWIND GIS\Temp

Path to LEANWIND GIS ports layer (shapefile)

C:\Users\p1477911\Desktop\LEANWIND\LEANWIND GIS\layers\Task 5.3 Ports.shp

Name and path for new shapefile containing selected ports

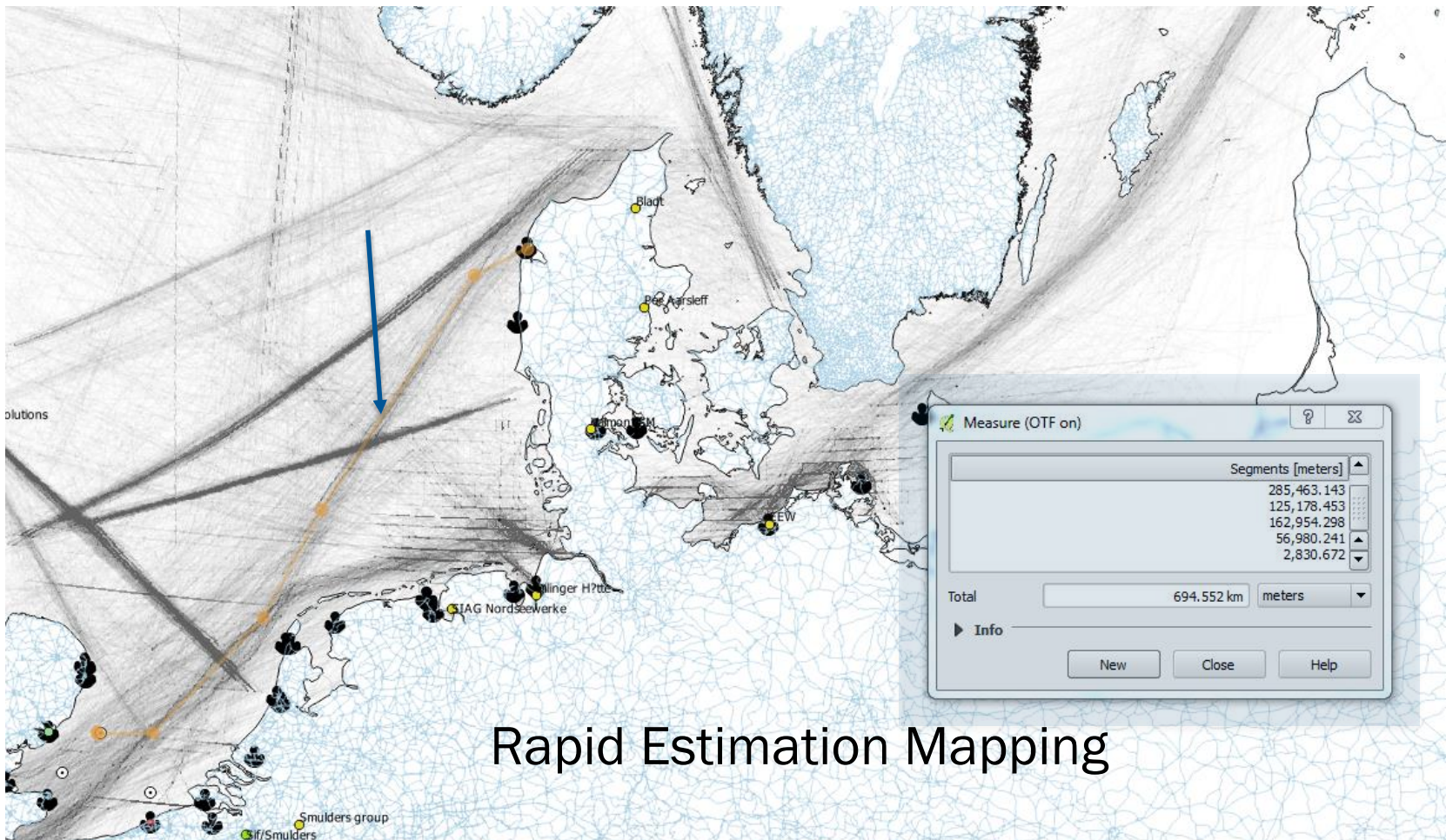
C:\Users\p1477911\Desktop\LEANWIND\LEANWIND GIS\Temp\chosen_ports1.shp

Port selection

Attribute table - Task 5.3 Ports :: Features total: 50, filtered: 50, selected: 0

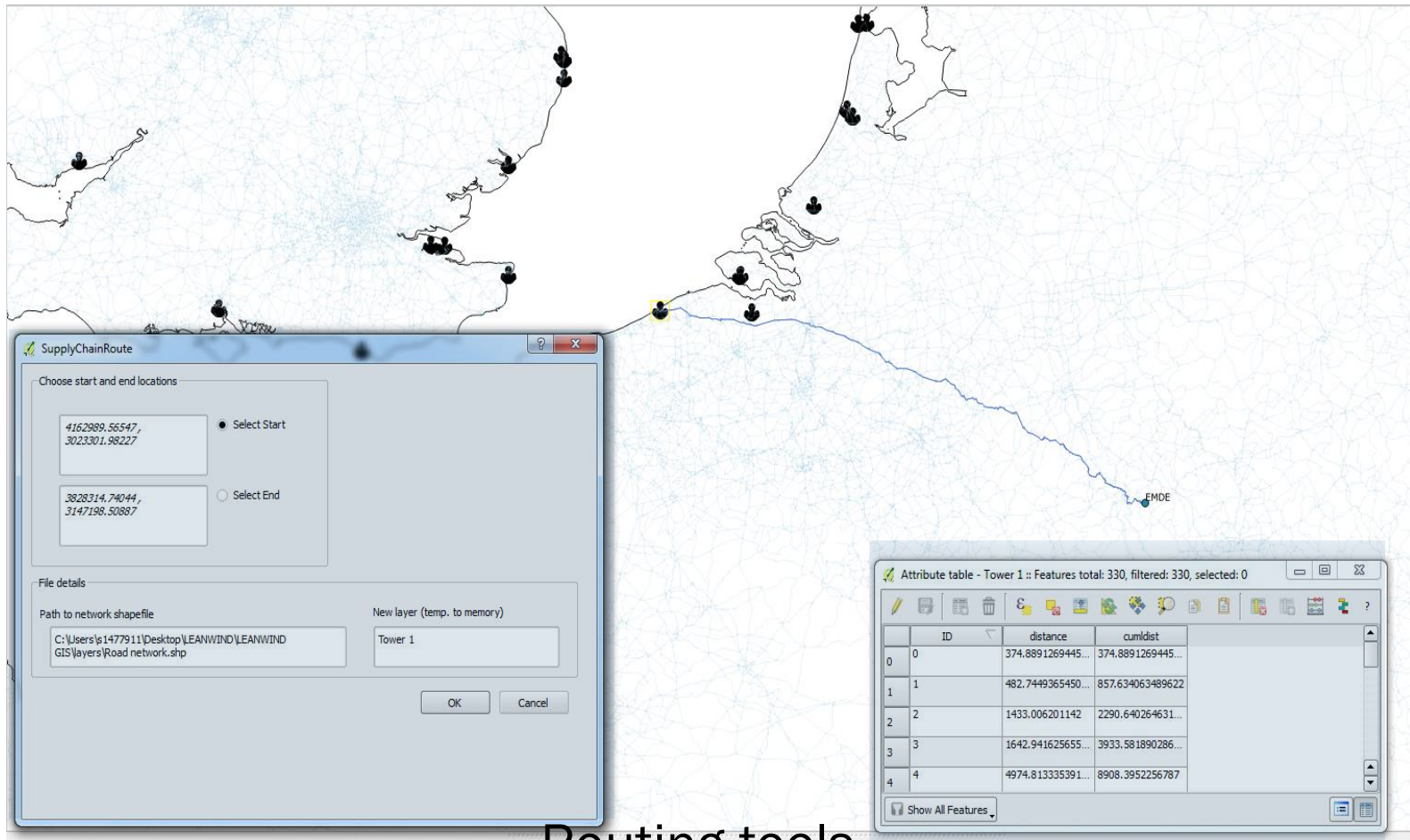
	Port's Nam	Country	Latitude	Longitude	Sea/Ocean	Offshore w	field_7	Offshore p	Role of th	Port depth	Entrance w	tidal rang	LOA(m)	D
0	Grimsby	UK	53.570000000000000	-0.060000000000000	Humber	Y	O&M	Humber gateway	O&M port	NULL	NULL	NULL	145	5.8
1	Hull	UK	53.740000000000000	-0.290000000000000	Humber	Y	NULL	Linco	Providing wind p...	11.300000000000000	NULL	NULL	215	10.4
2	Humberport	UK	53.649999999999999	-0.240000000000000	Humber	Y	C - O&M	NULL	NULL	11.000000000000000	840	6.400000000000000	NULL	11
3	Mostyn	UK	53.310000000000000	-3.200000000000000	River Dee	Y	C - O&M	1-Burbo Bank 2-...	1-Installation2-C...	8.000000000000000	any	8.699999999999999	any	any
4	Barrow	UK	54.100000000000000	-3.220000000000000	North sea	Y	NULL	Wanley Phase 1	Dong will use 18 ...	10.000000000000000	36	NULL	150	8.5
5	Ramsgate	UK	51.320000000000000	1.400000000000000	NULL	Y	NULL	1-Kentsish flats e...	1-Supporting the...	7.200000000000000	160	4.600000000000000	180	6.5
6	Bremerhaven	Ger	53.579999999999999	8.500000000000000	North sea	Y	NULL	1-Nordsee Ost 2-...	1-Installation bas...	14.500000000000000	No restriction	3.770000000000000	any	14.5
7	Oostende	Bel	51.219999999999999	2.930000000000000	North sea	Y	NULL	1-Thornion bank ...	1-Installation hub ...	13.000000000000000	250	4.500000000000000	250	8
8	Amsterdam-MEC	NL	52.400000000000000	4.700000000000000	North sea	N	AR B I	AR B I	AR B I	14.000000000000000	AR B I	AR B I	any	any

GIS Tools Overview



Rapid Estimation Mapping

GIS Tools Overview



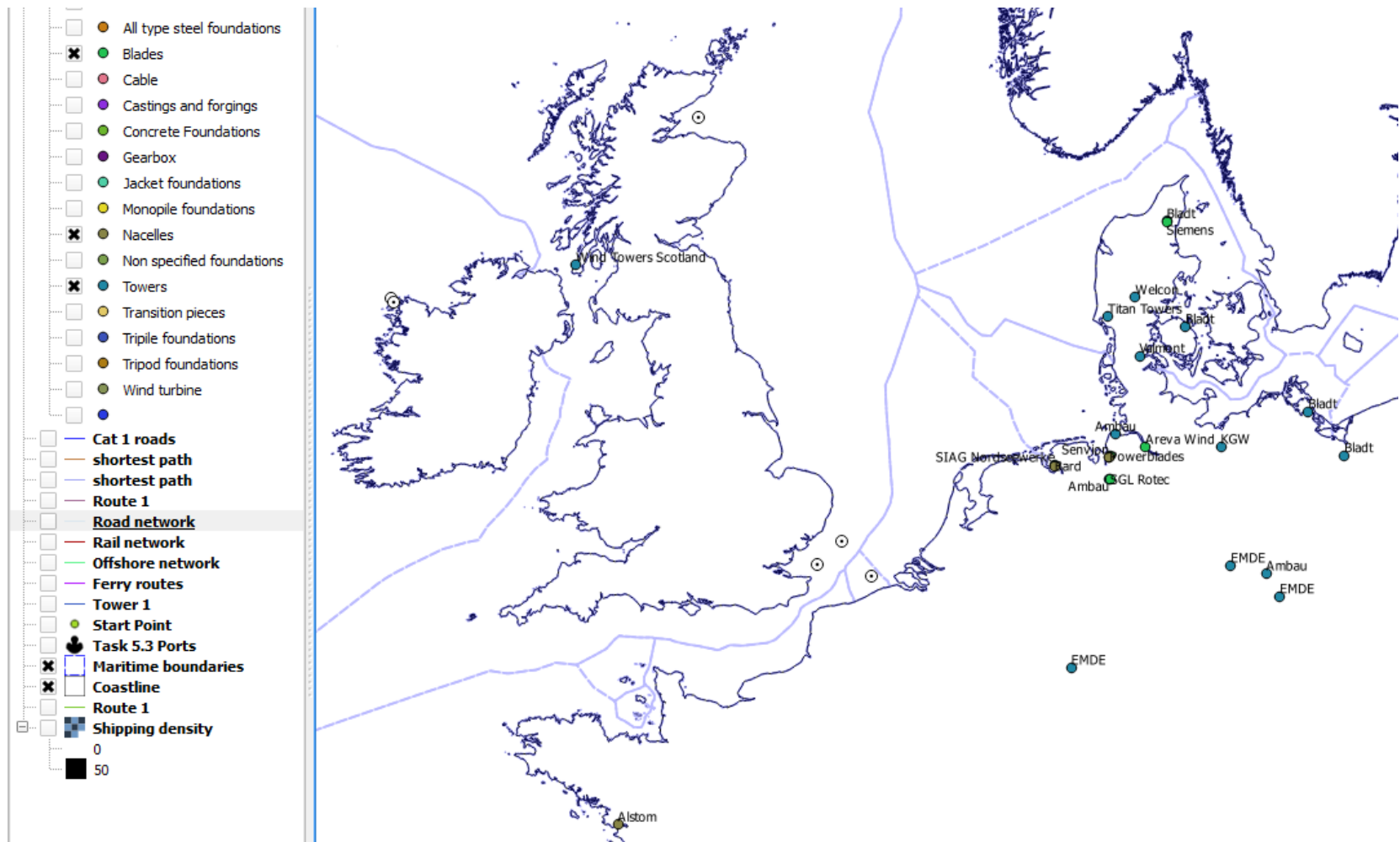
Routing tools

GIS Model Outputs

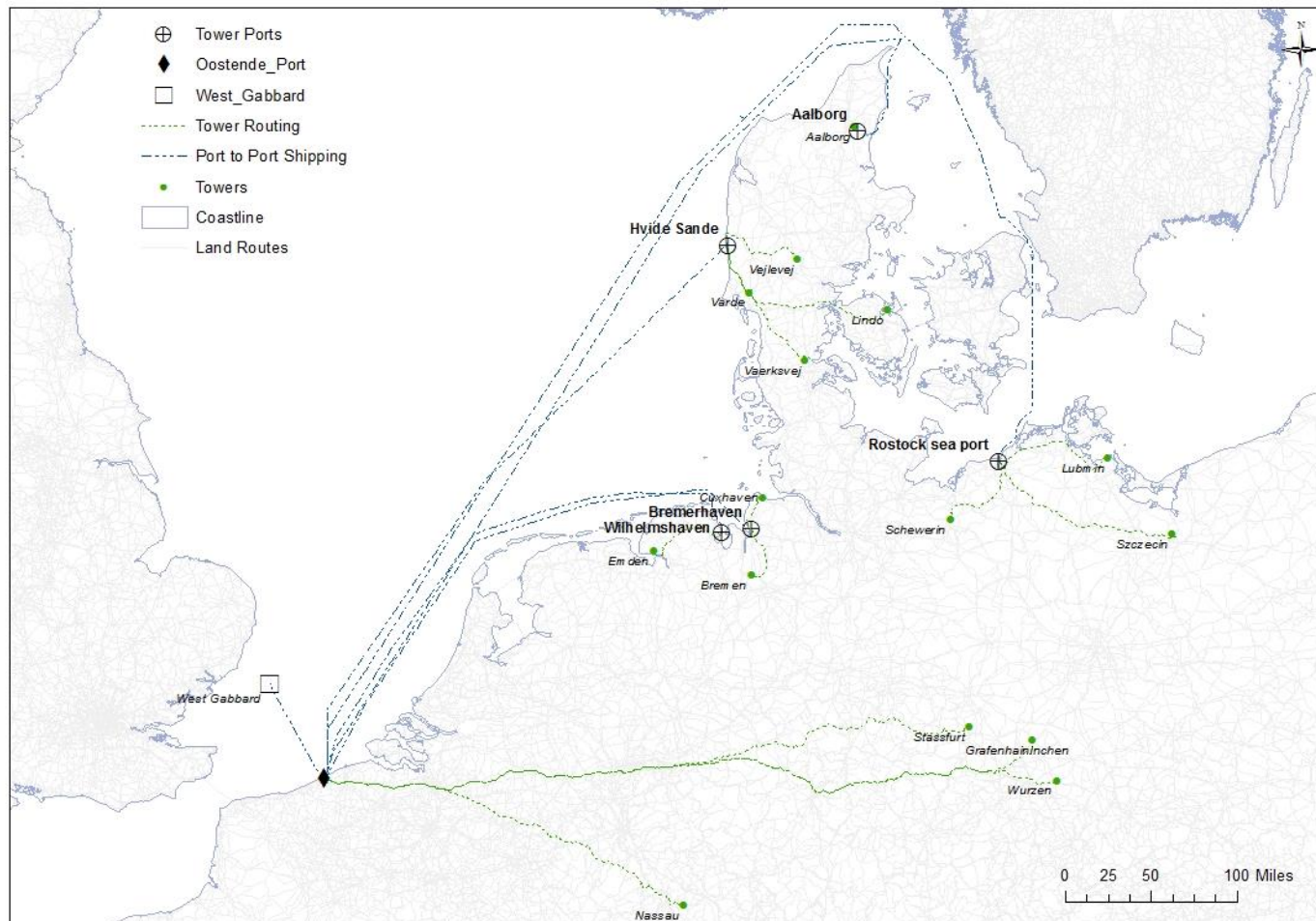
The following displays have been loaded with some of the data outputs provided for several cases with the West Gabbard LEANWIND Site.

- Installation, Harwich & Oostende
- Operations & Maintenance
- Decommissioning

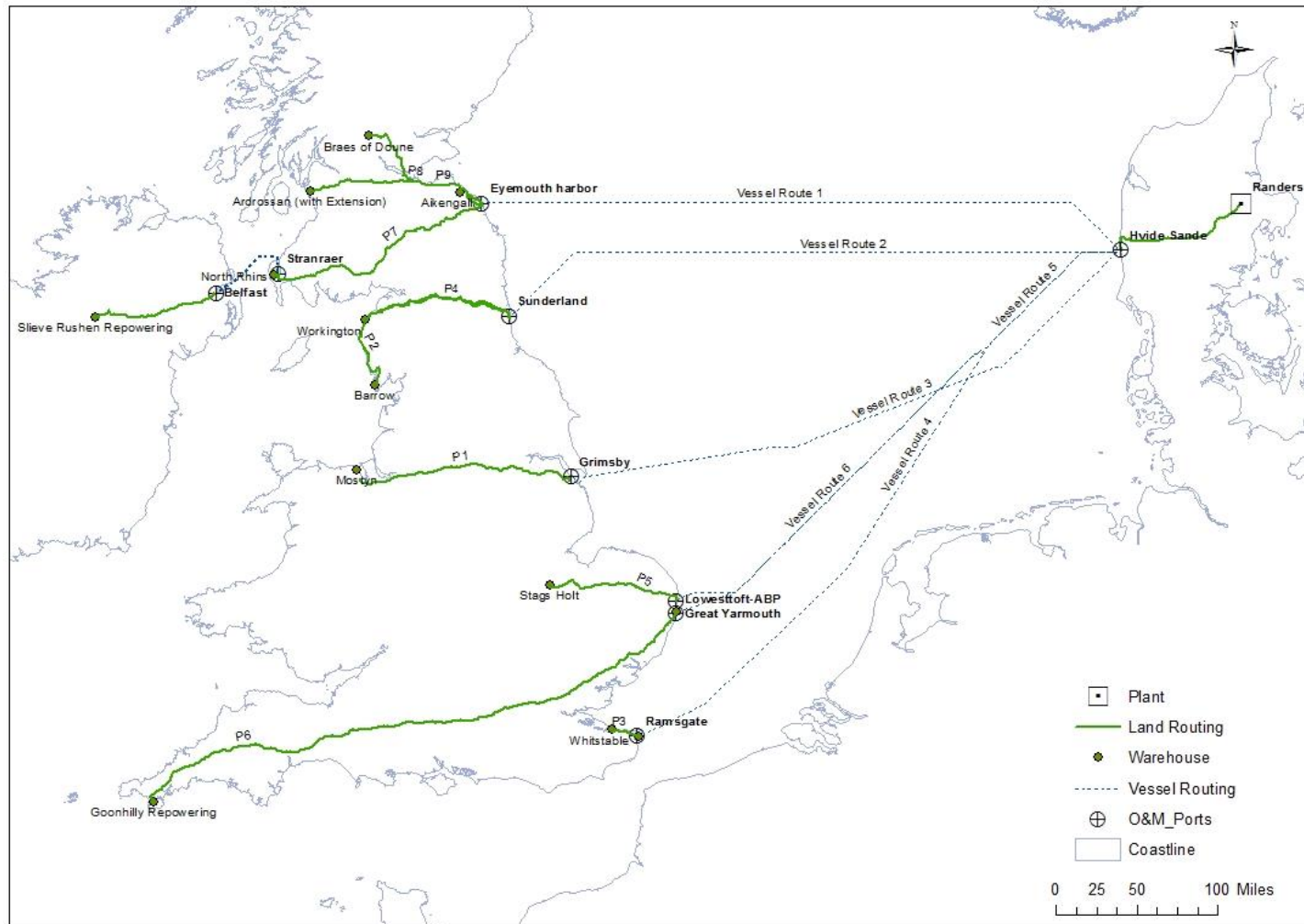
LEANWIND Sites and Sample components



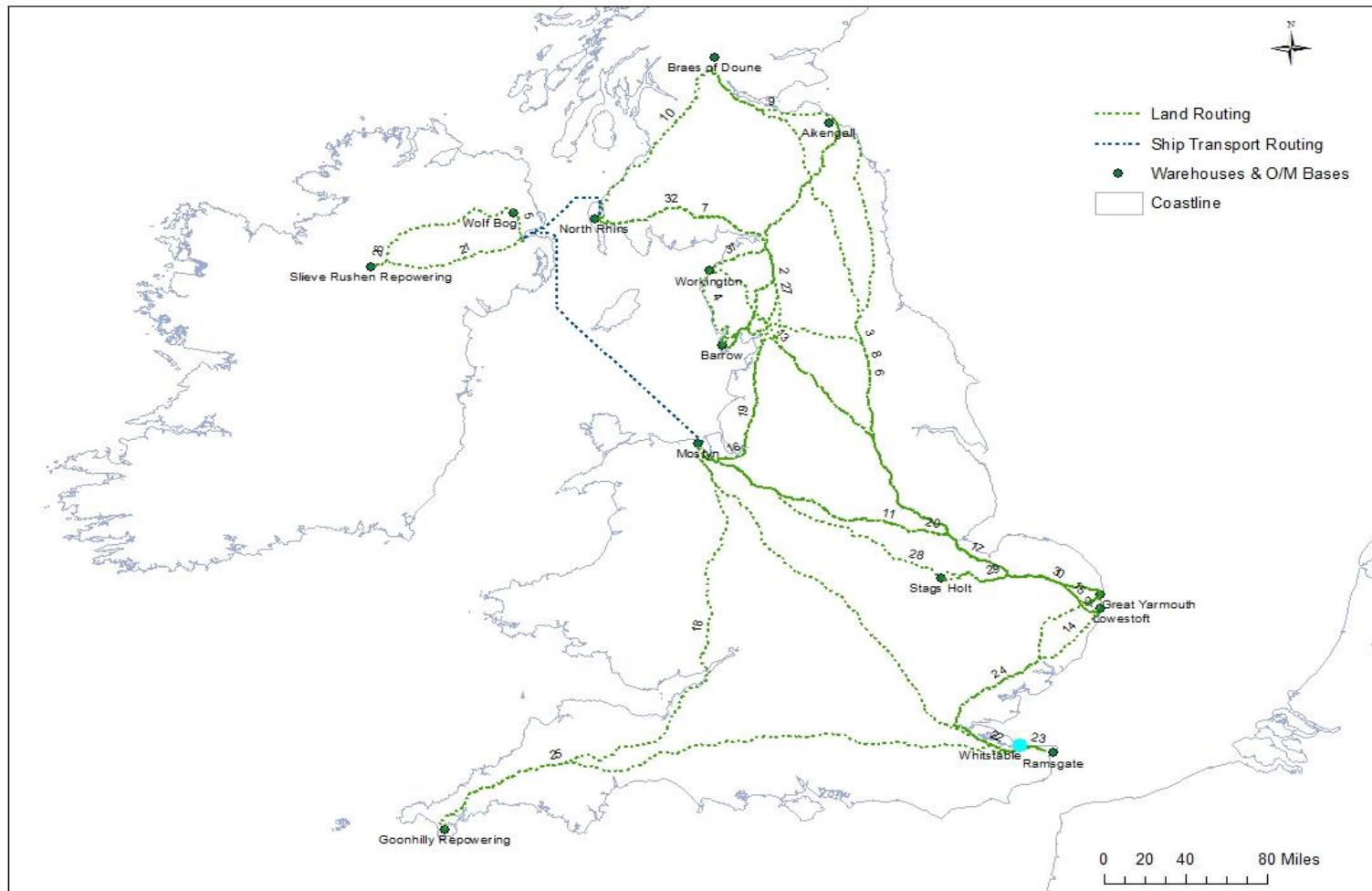
Installation Phase: Oostende – Tower Component Flow



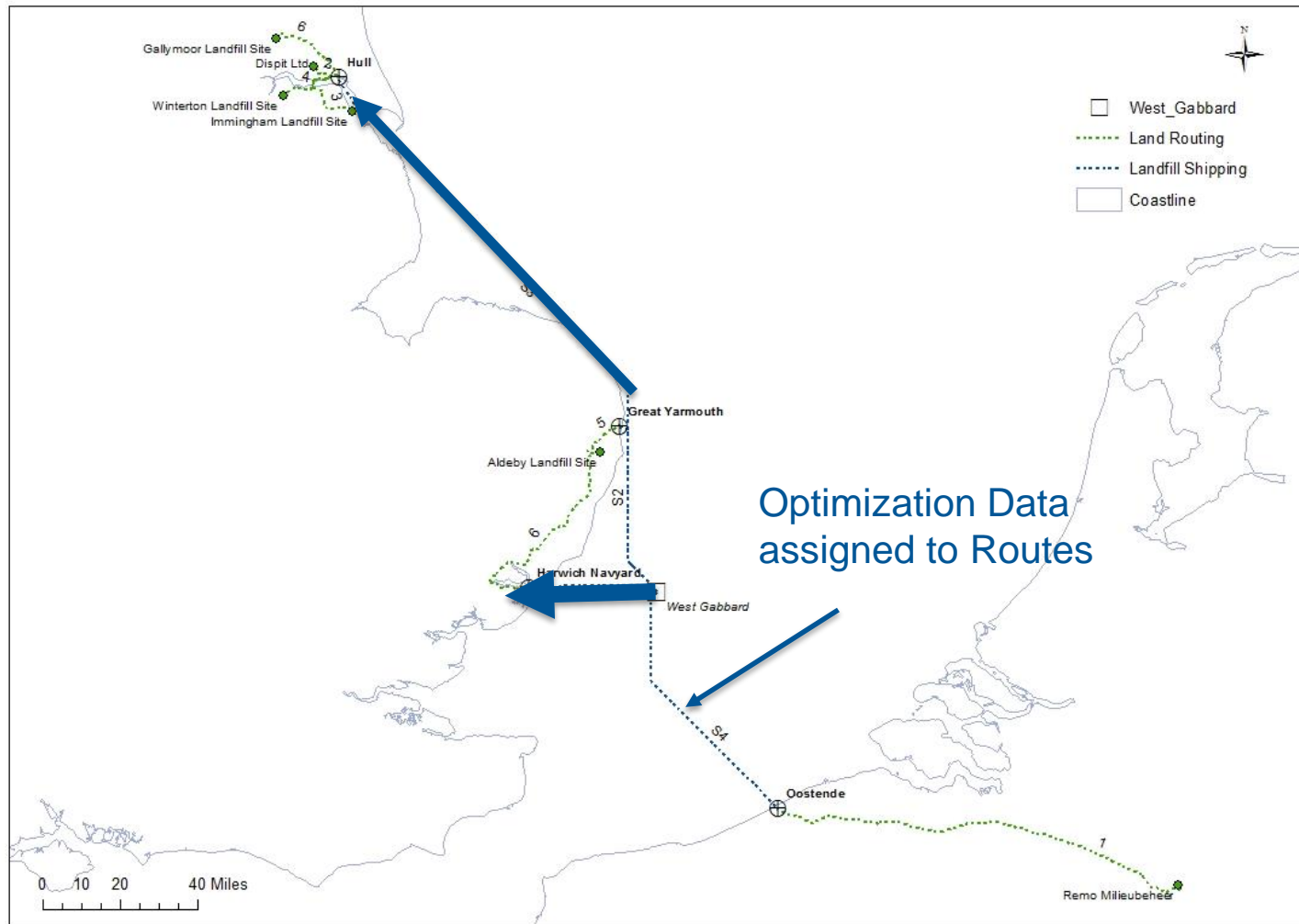
Operations & Maintenance: Plant to Warehouse



Operations & Maintenance: Warehouse to O & M Base



Decommissioning: Non recyclable components to landfill



Any Questions..?



**Thank you very much
for your attention**



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