

## Final Report

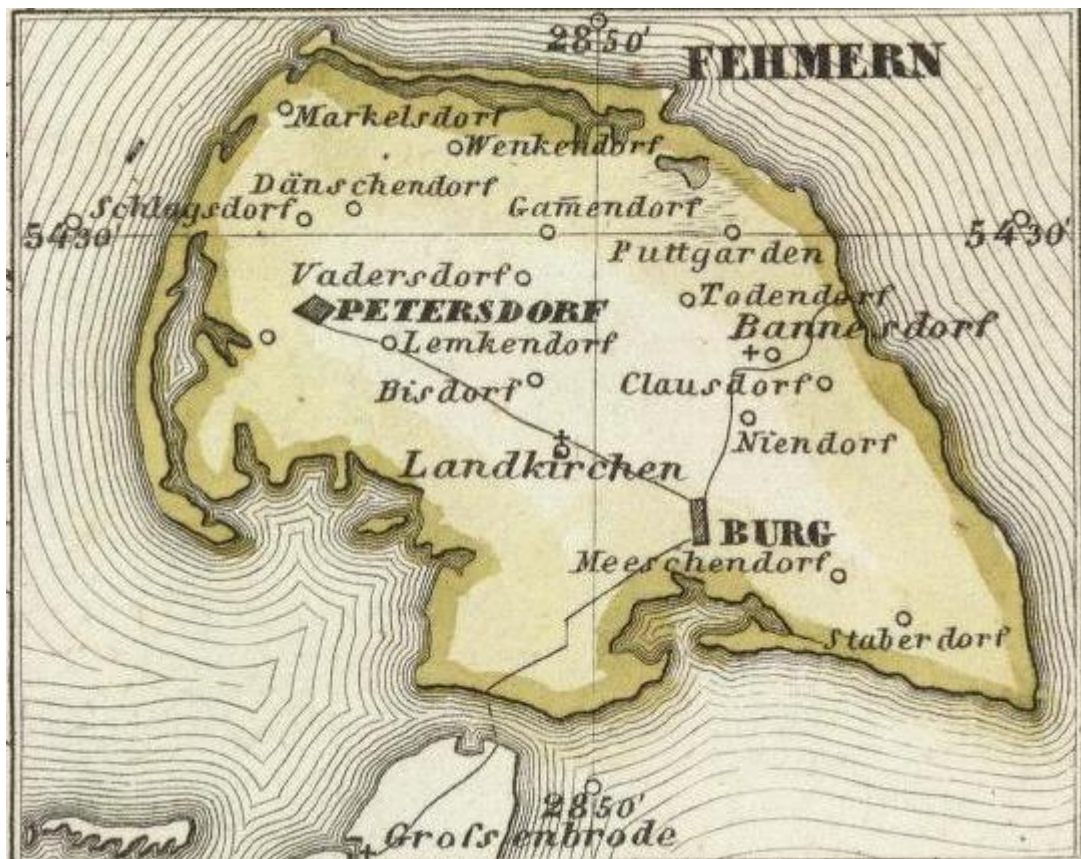
# FEHMARNBELT FIXED LINK HYDROGRAPHIC SERVICES (FEHY)

## Marine Soil - Baseline

## Coastal Morphology Along Fehmarn and Lolland

E1TR0056 - Volume III

## APPENDICES



*Historical Map of Fehmarn. Meyer's Handatlas 1852, No 138, Herzogthum Schleswig. From David Rumsey Map Collection, [www.davidrumsey.com](http://www.davidrumsey.com)*

**Prepared for: Femern A/S**

**By: DHI/IOW Consortium**

in association with LICEngineering, Bolding & Burchard and Risø DTU



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**Maps:**

Unless otherwise stated:

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GEUS (De Nationale Geologiske Undersøgelser for Danmark og Grønland)

HELCOM (Helsinki Commission – Baltic Marine Environment Protection Commission)

Landesamt für Vermessung und Geoinformation Schleswig-Holstein (formerly Landes-  
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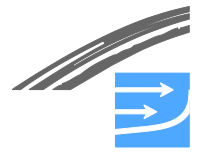
Model software geographic plots: Also data from Farvandsvæsenet and Bundesamt für  
Seeschifffahrt und Hydrographie

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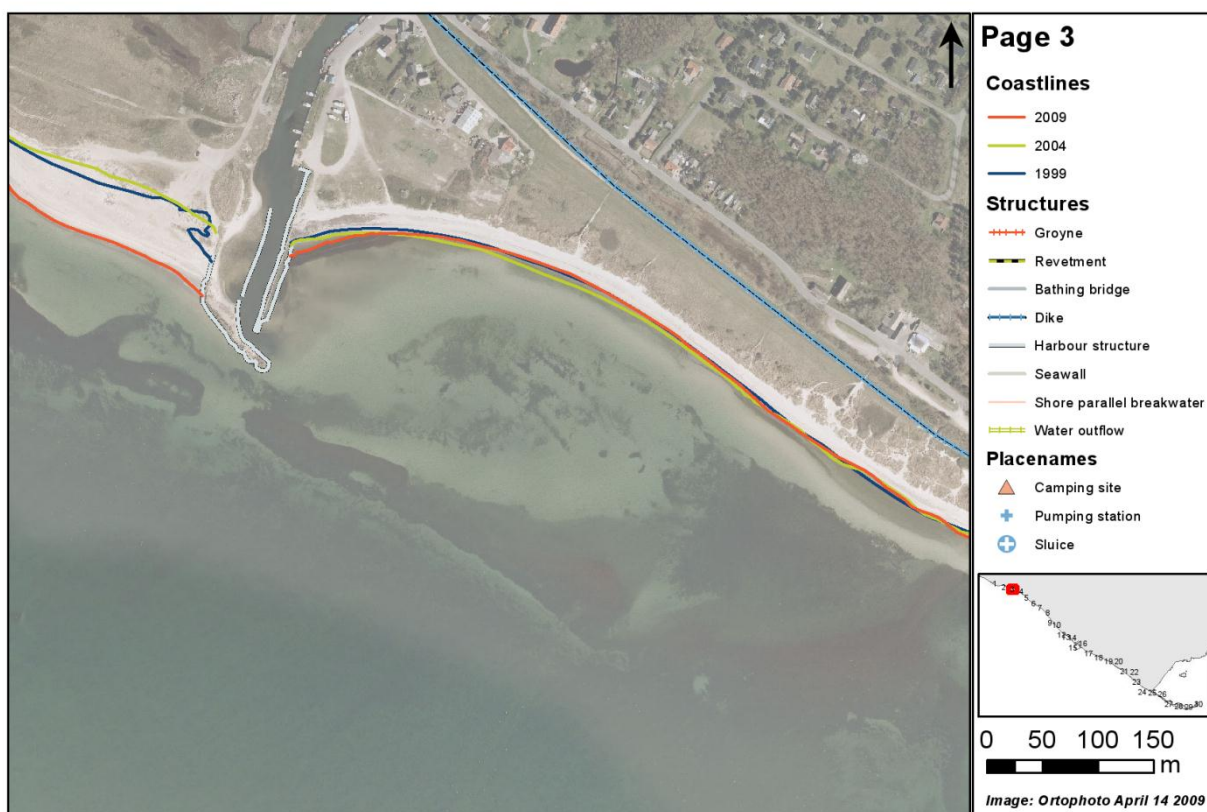
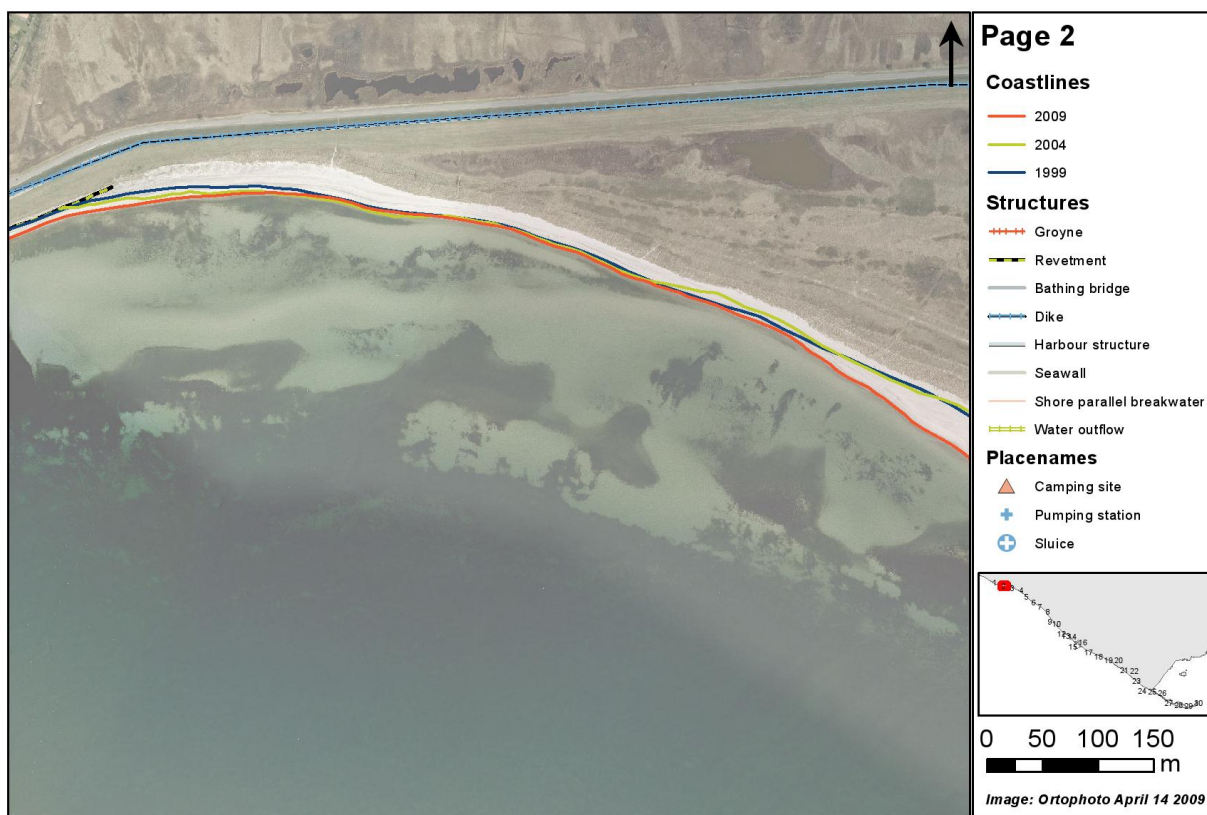


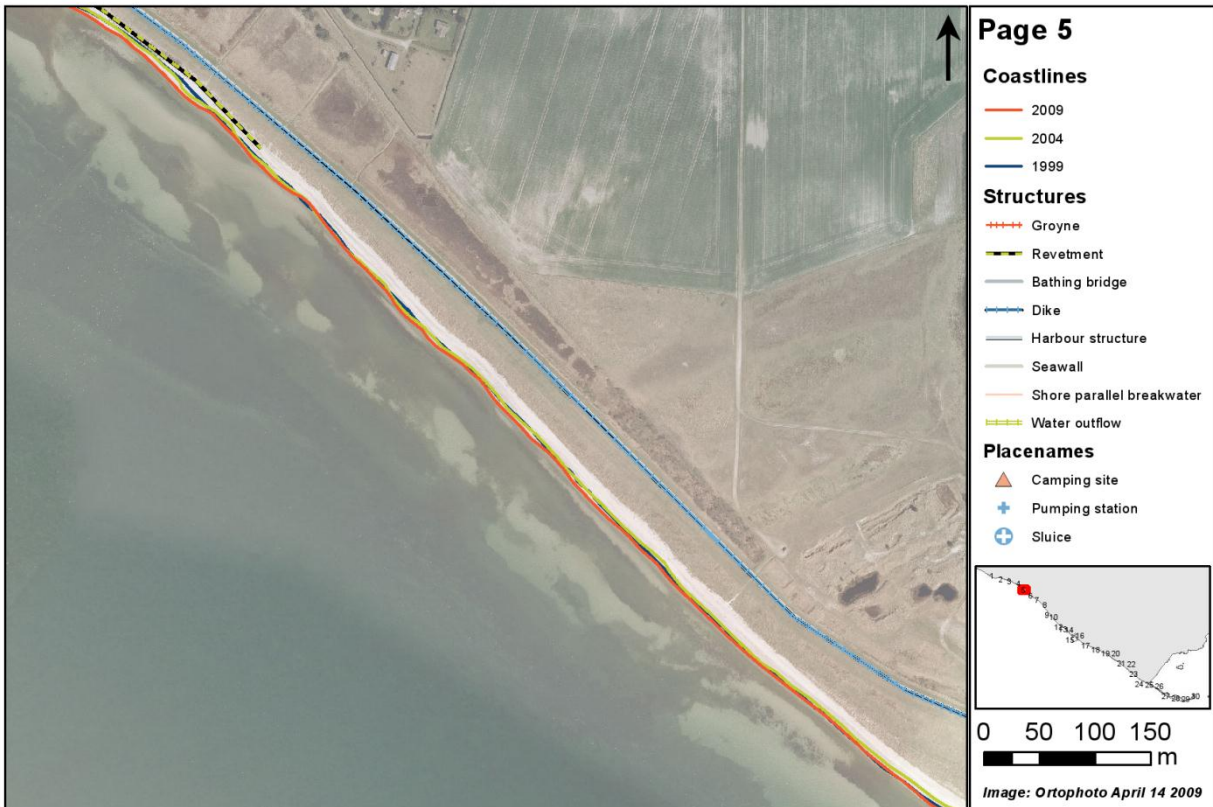
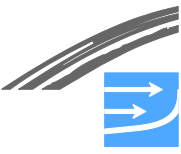
## ***A P P E N D I X   A***

### ***Aerial Photos, South Coast of Lolland***

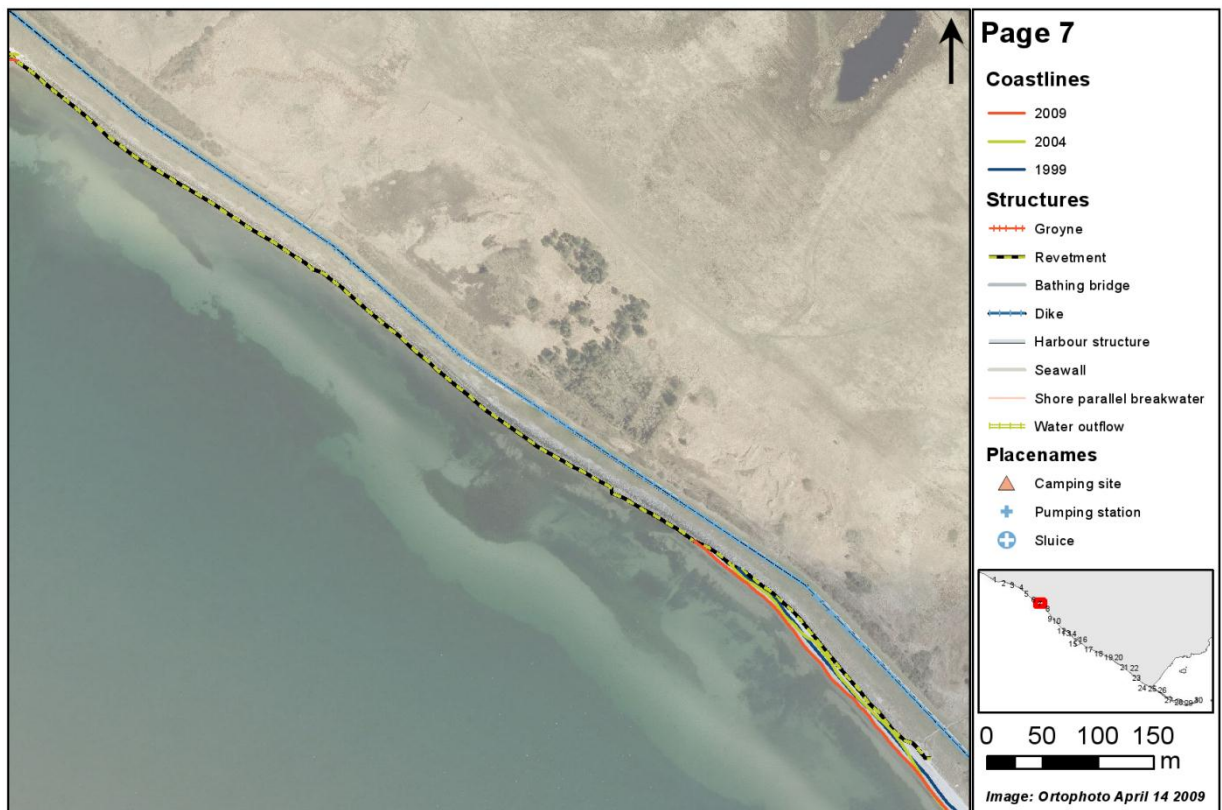
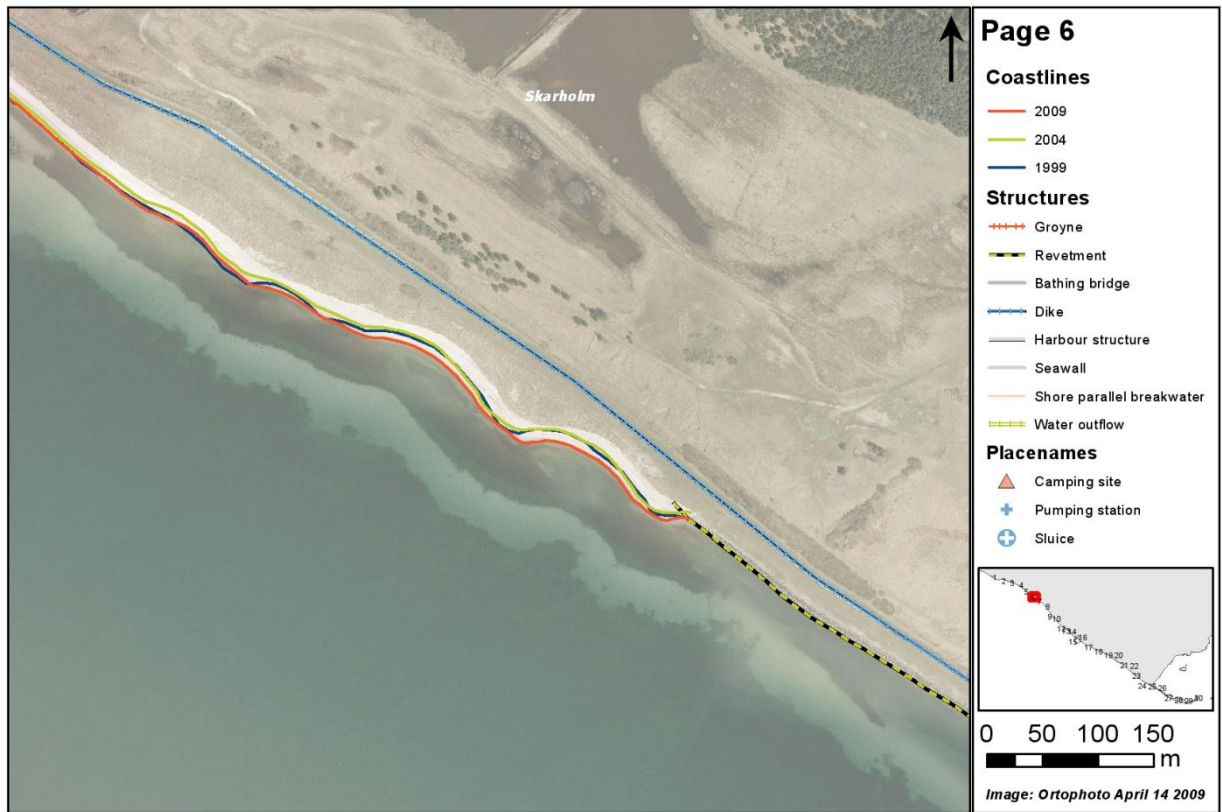


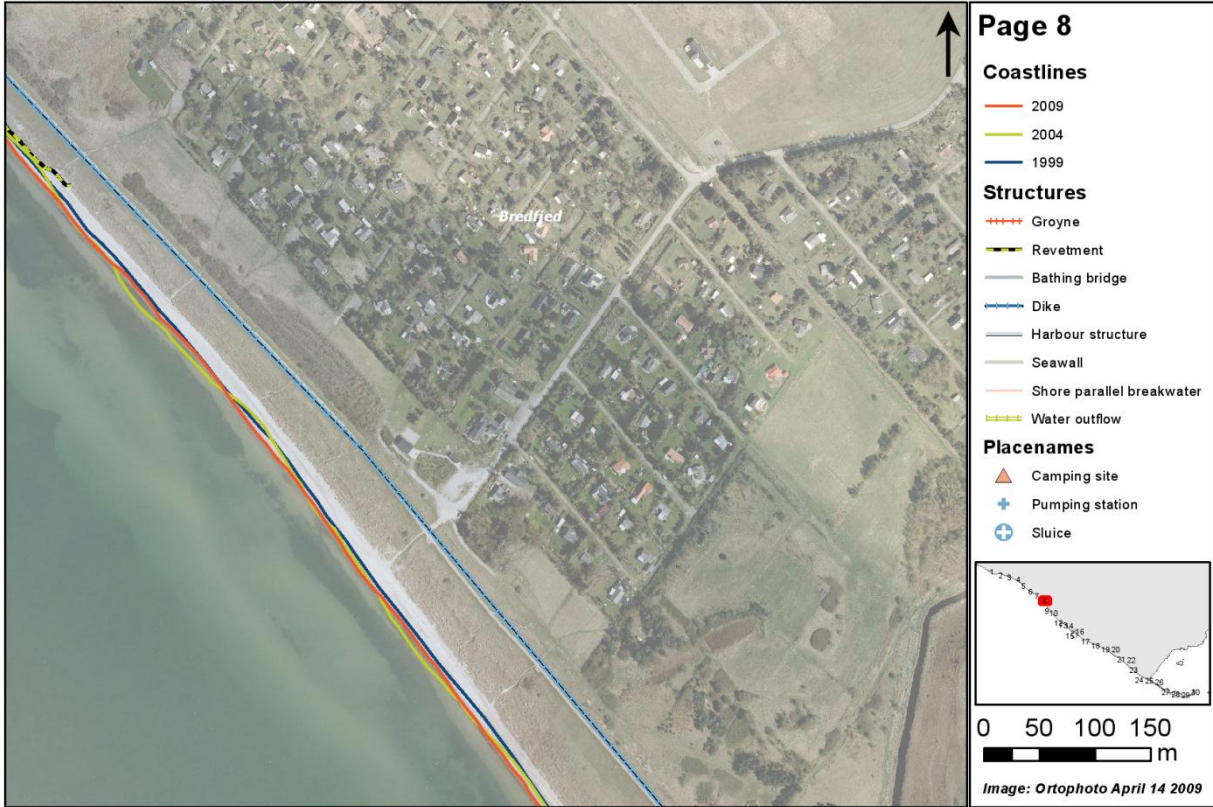




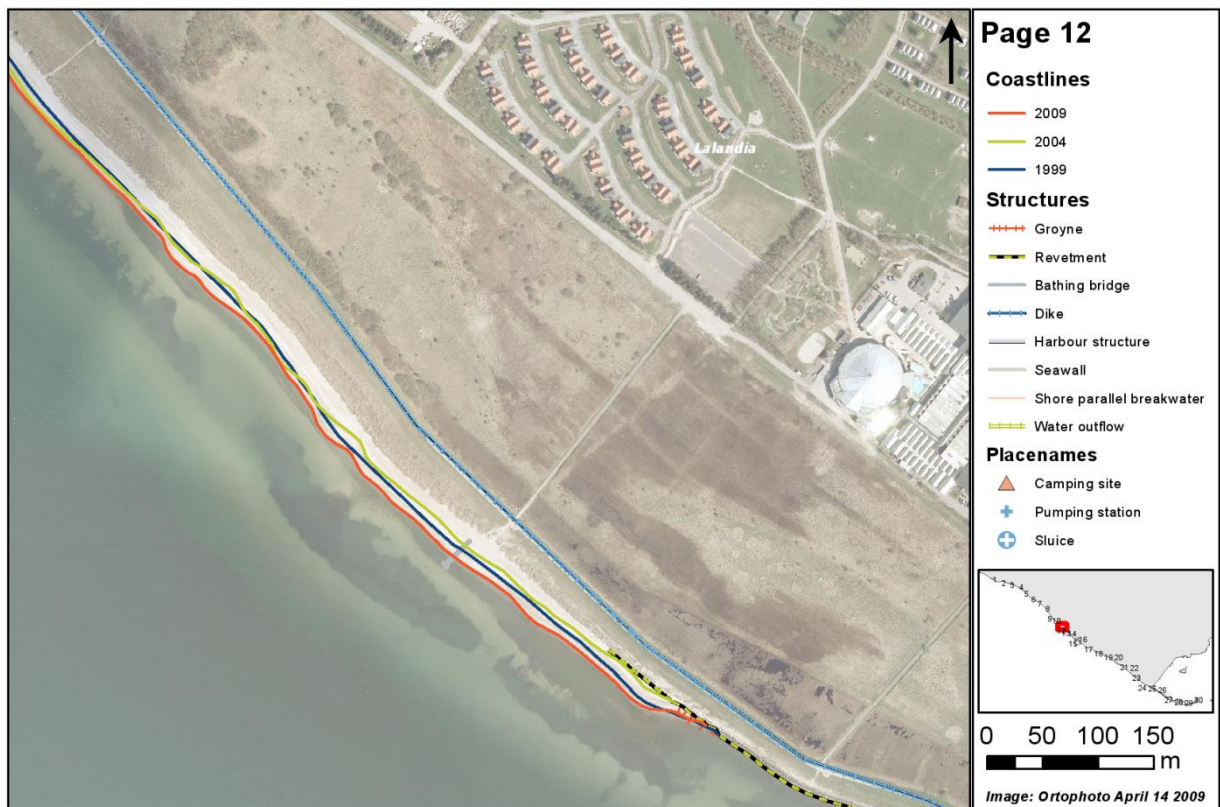






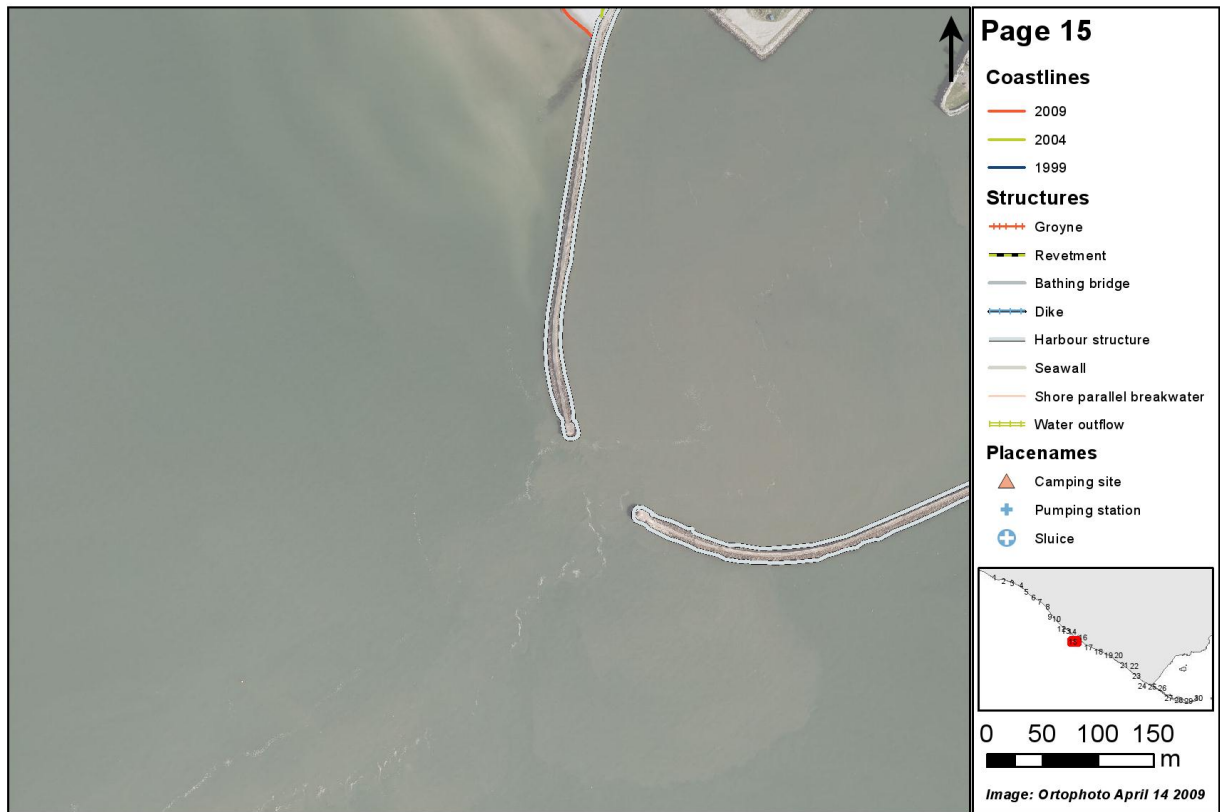


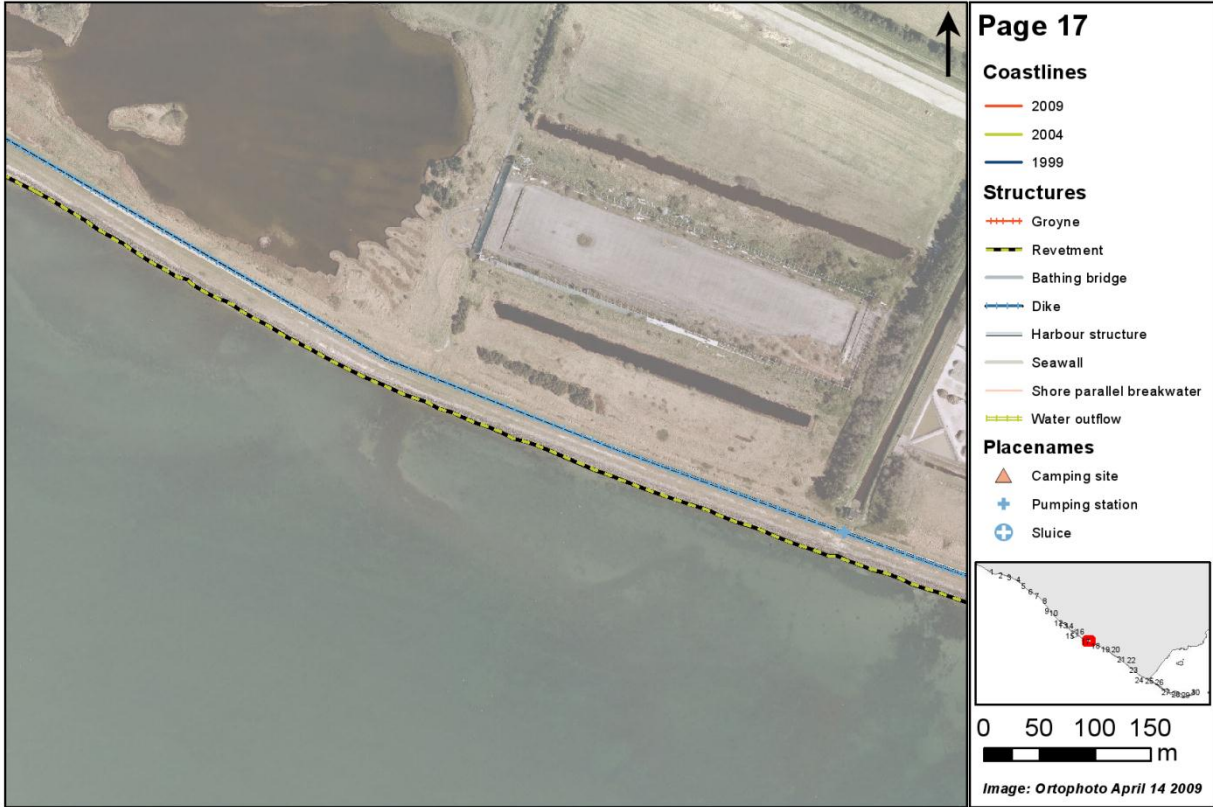
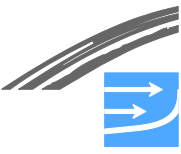




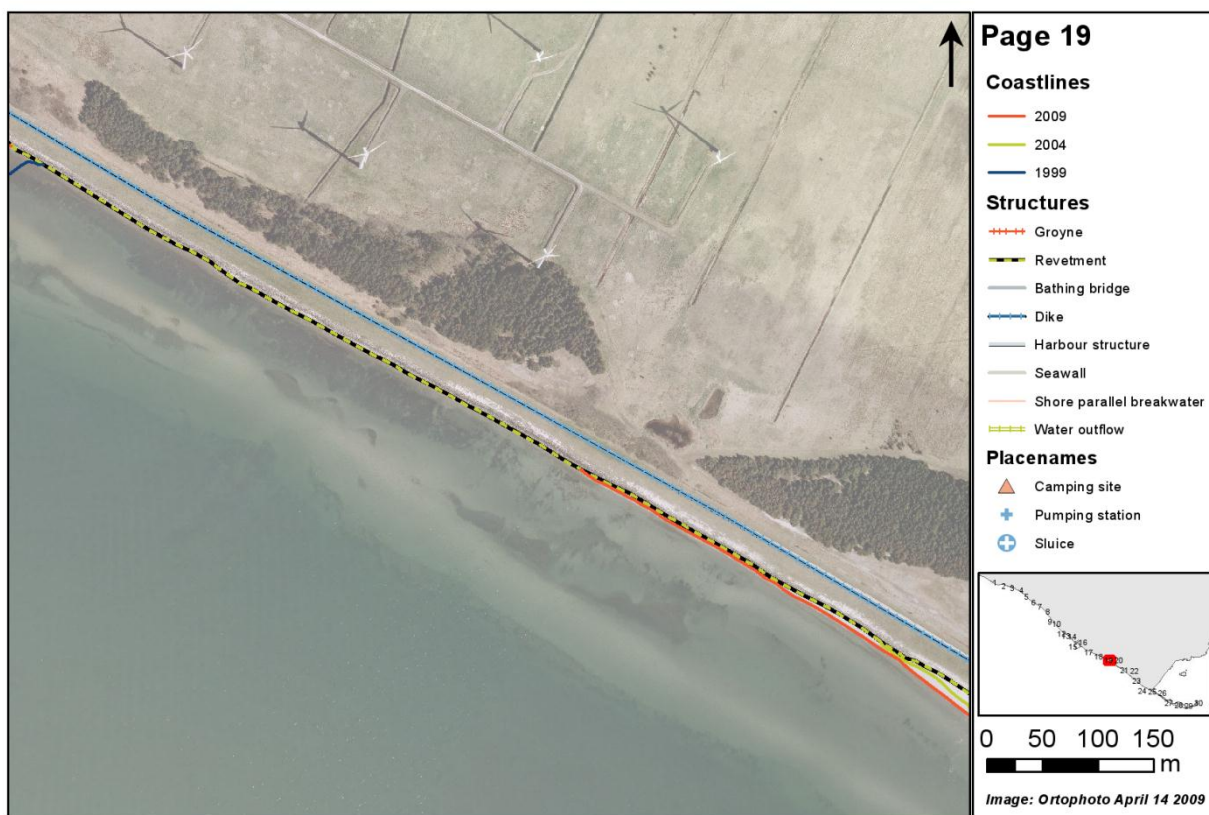


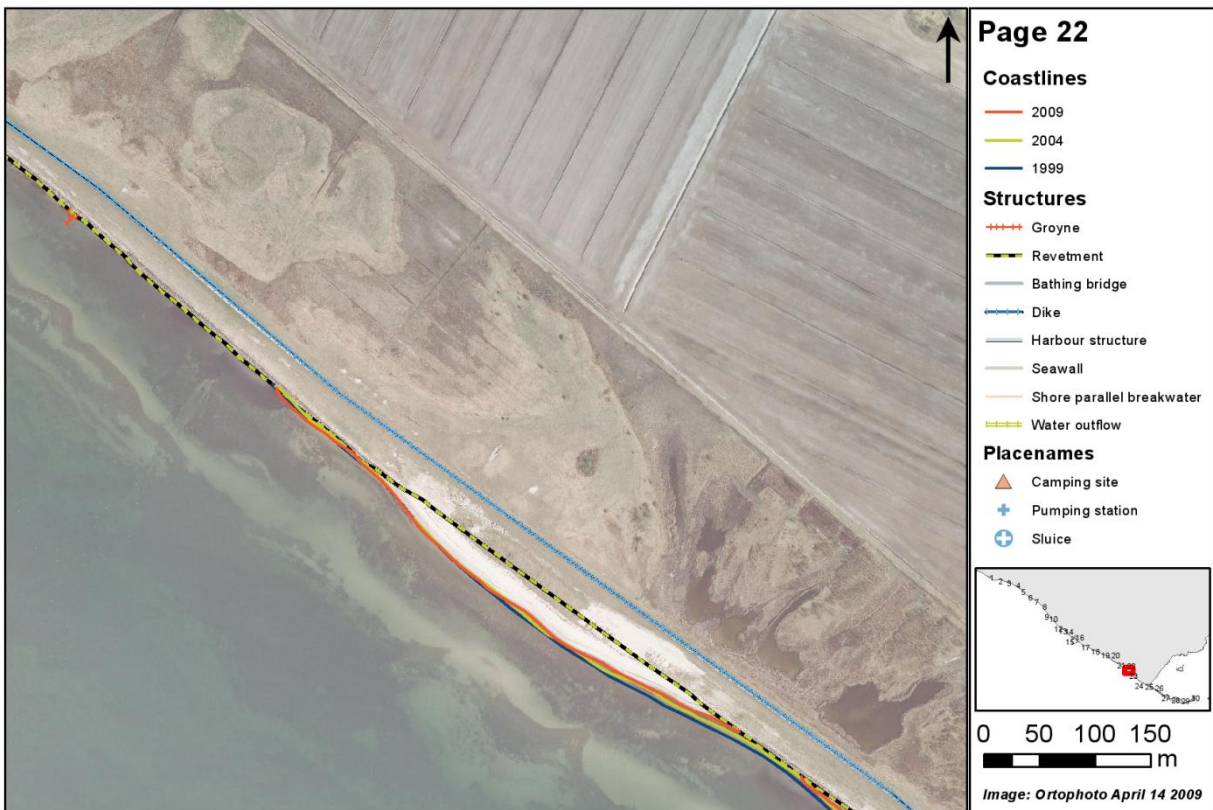
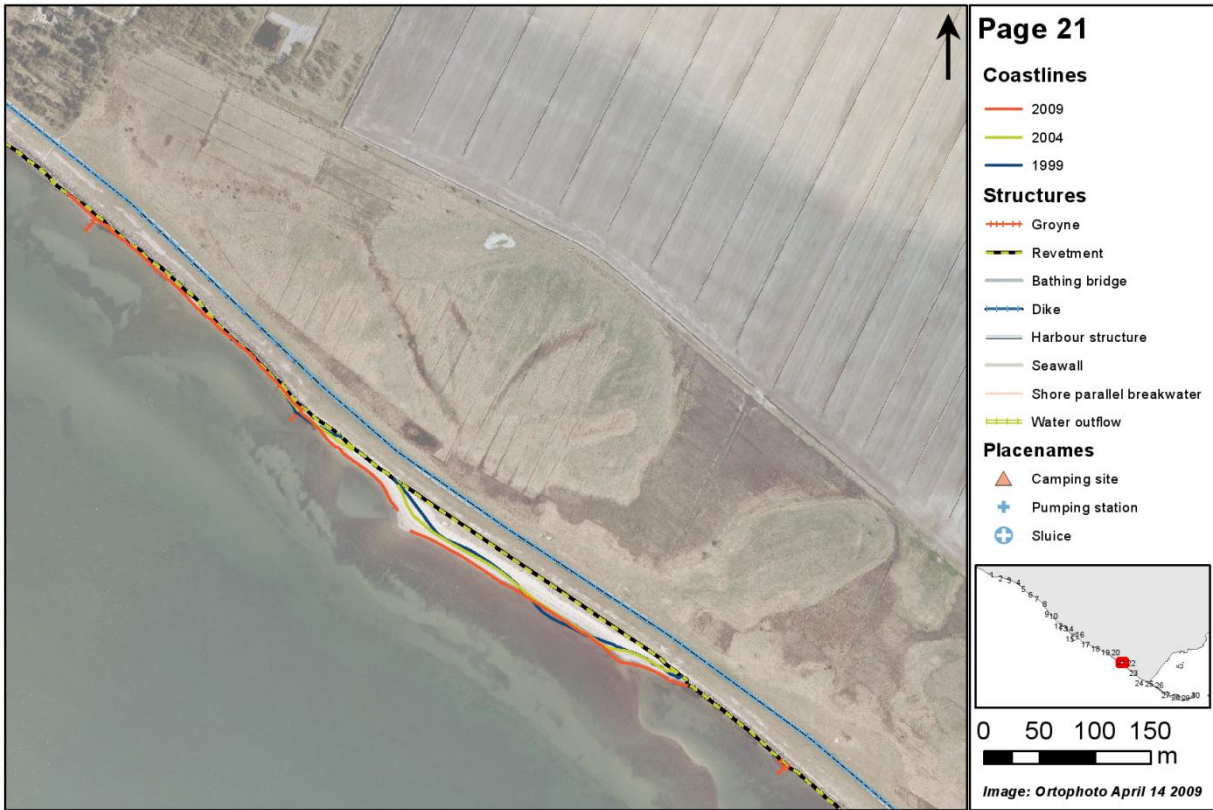




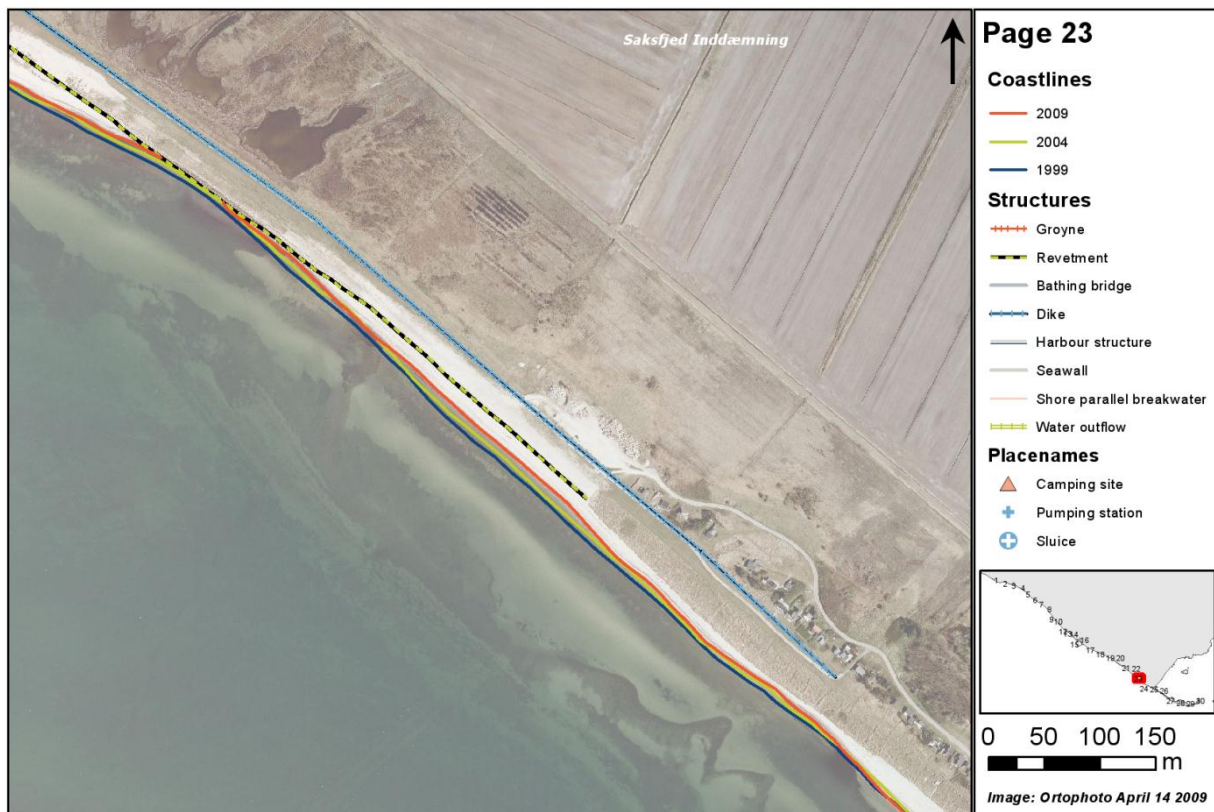


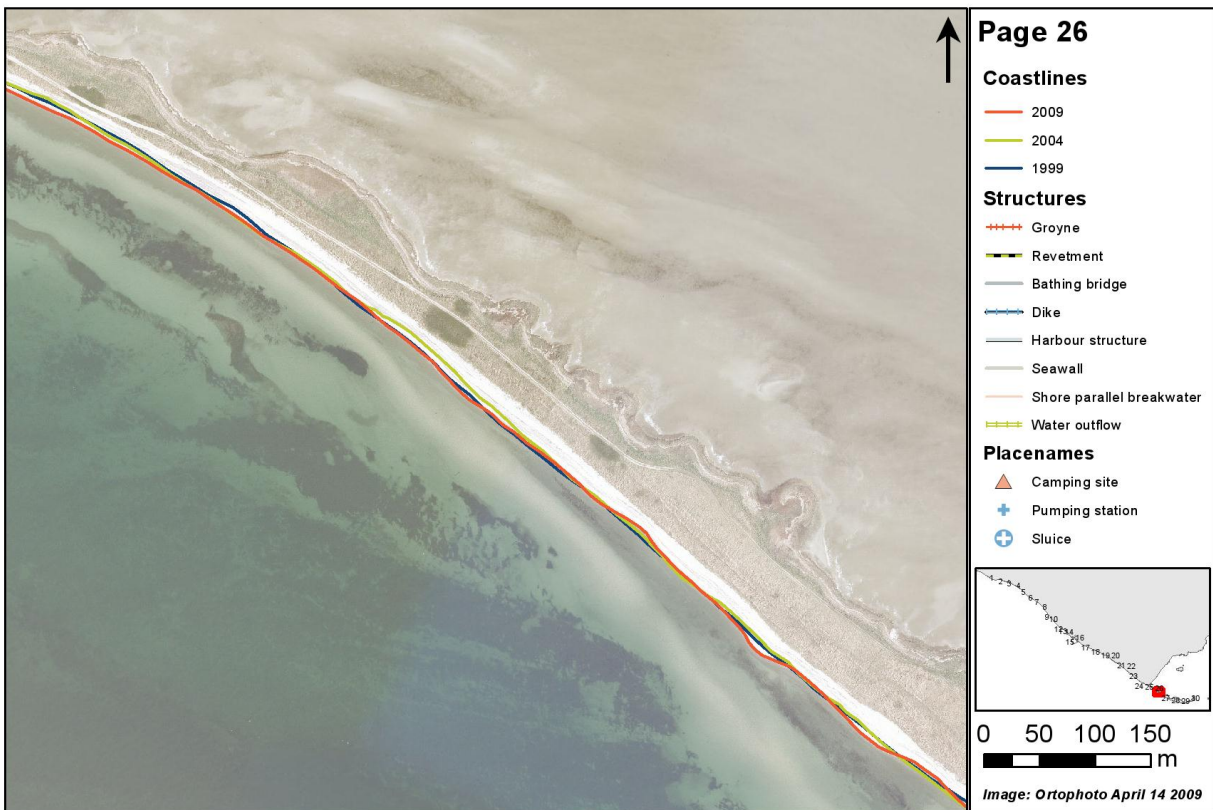
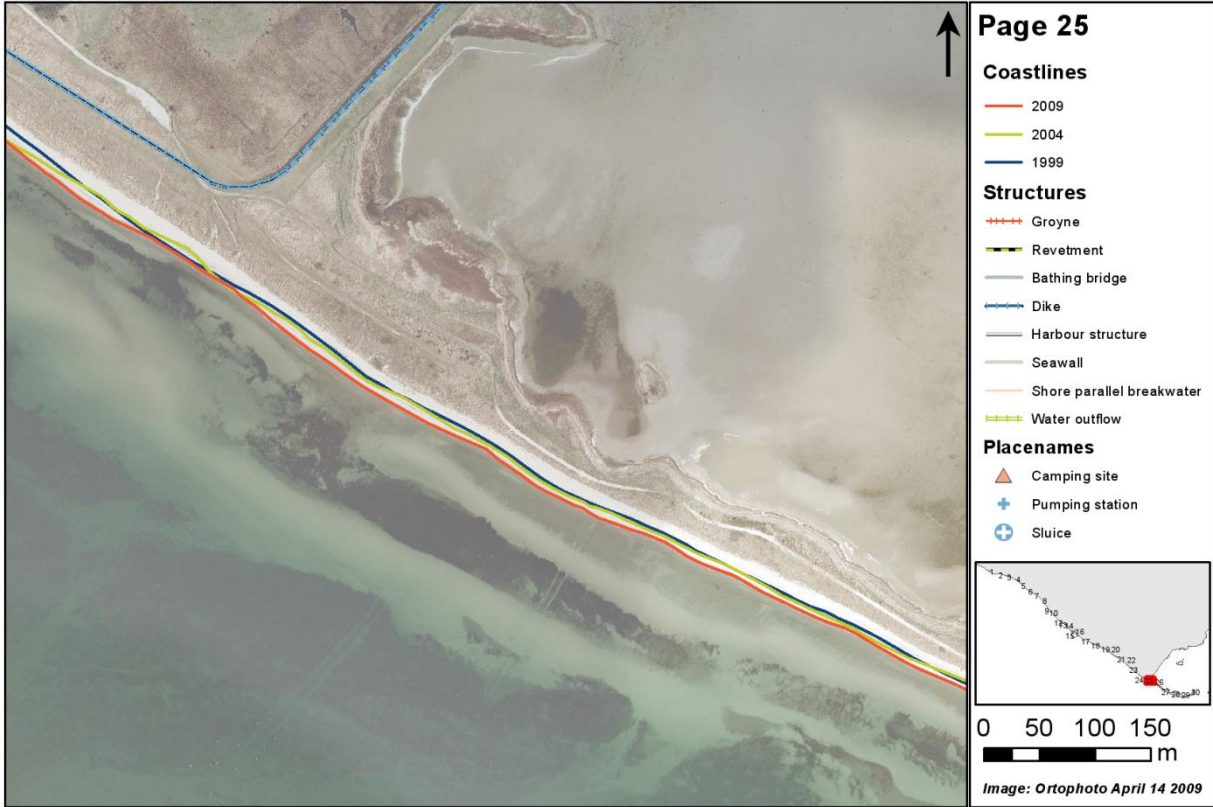




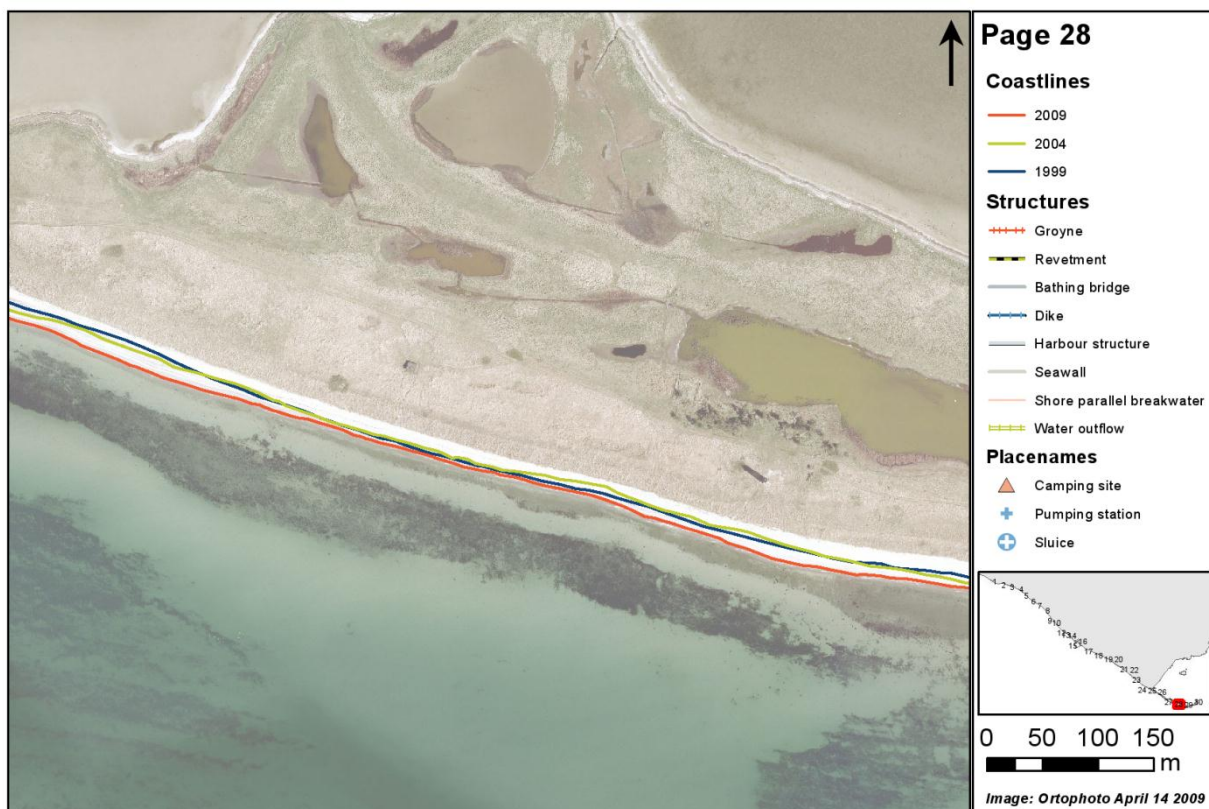
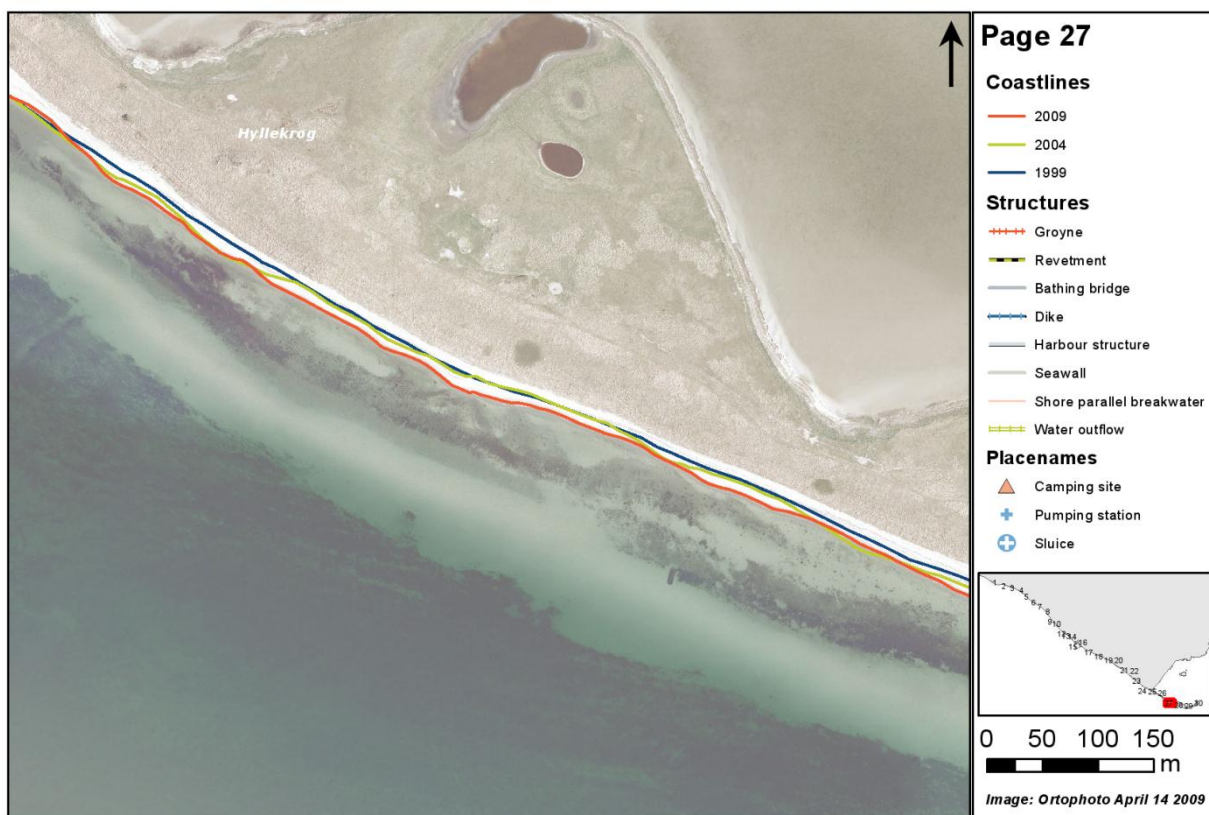


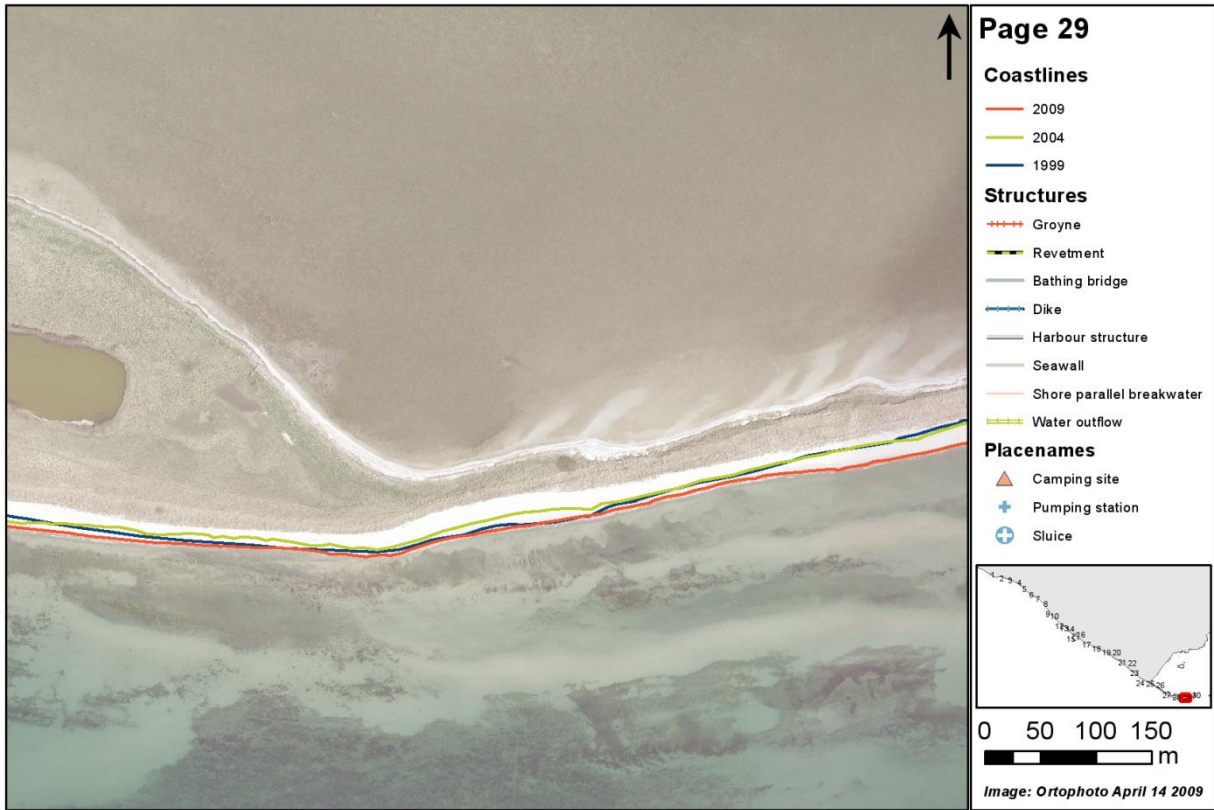


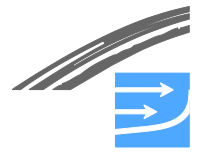






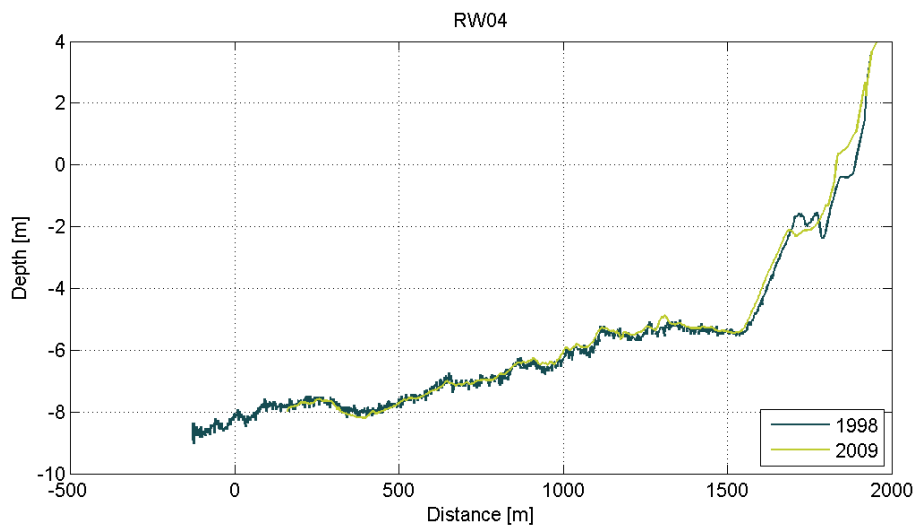
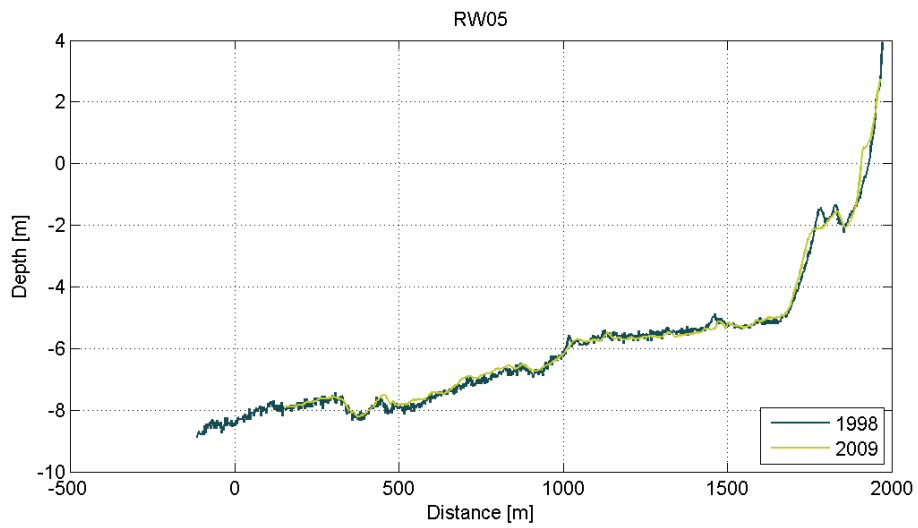
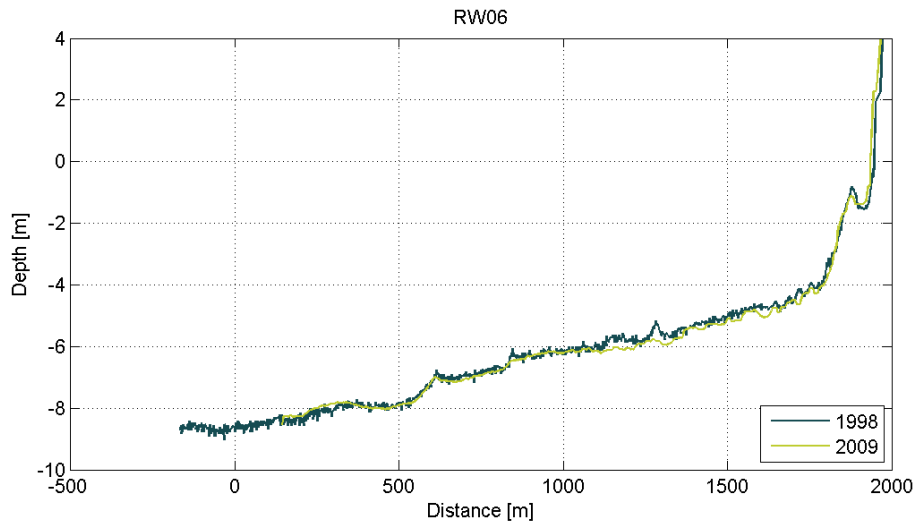




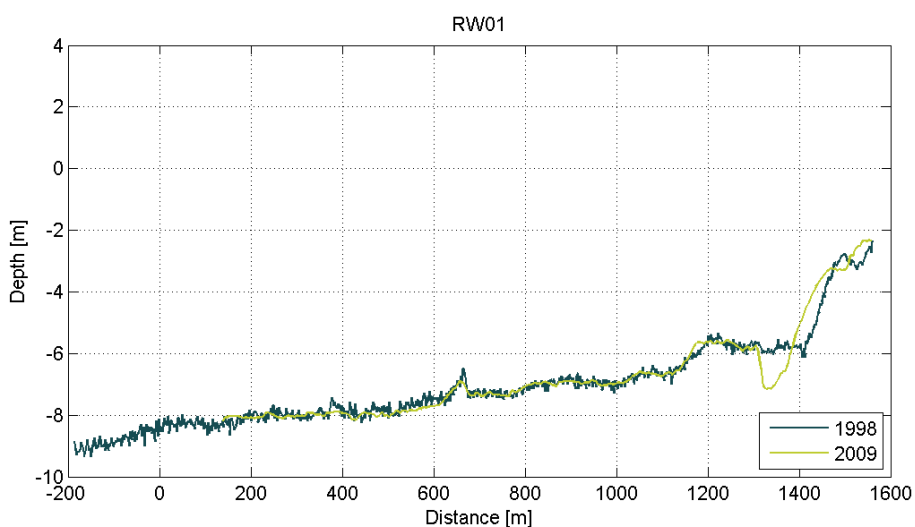
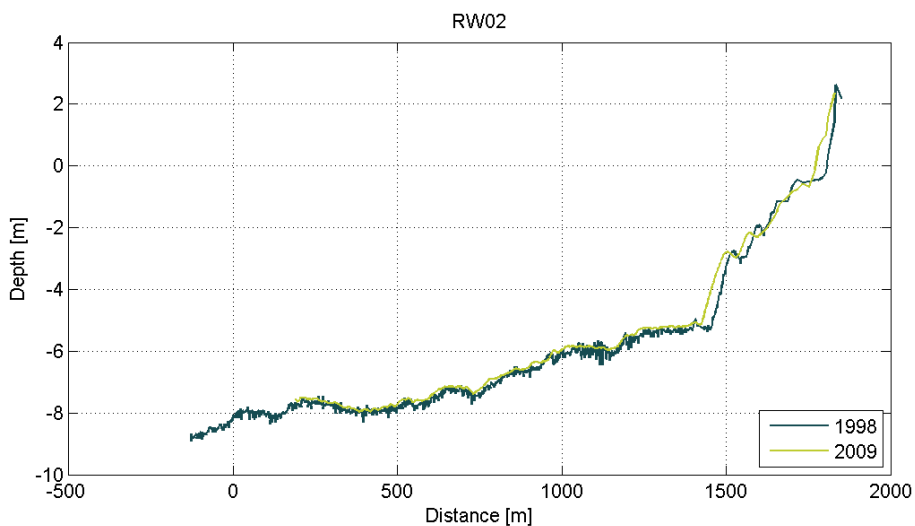
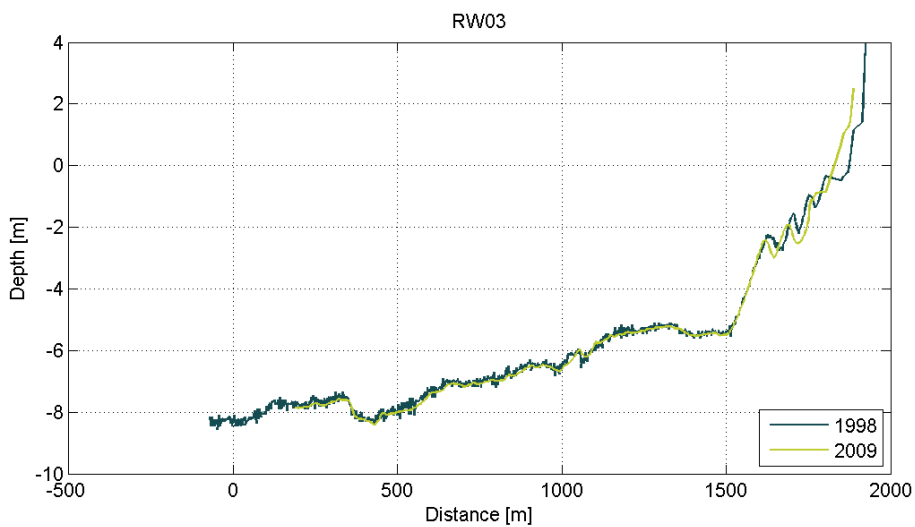


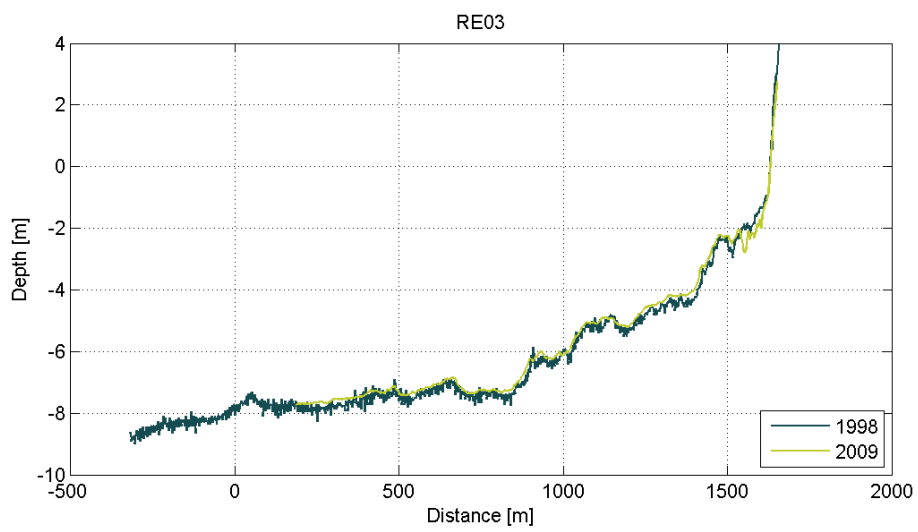
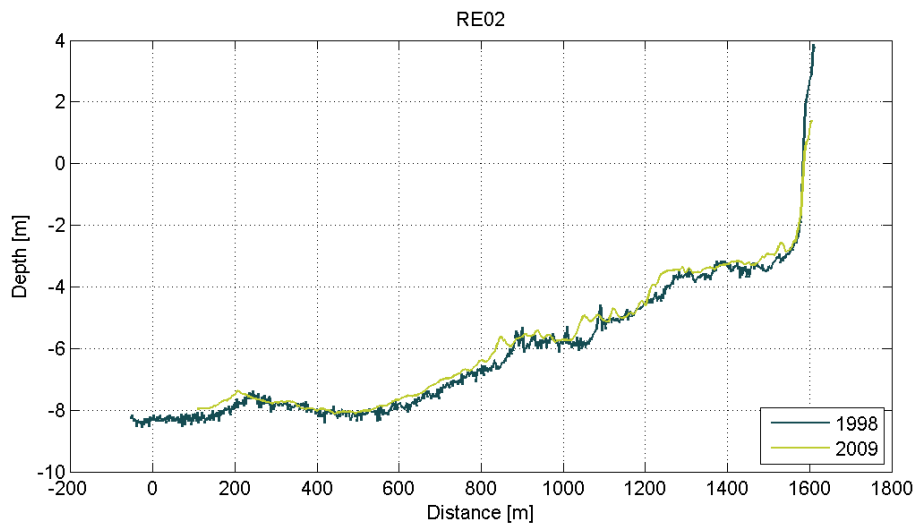
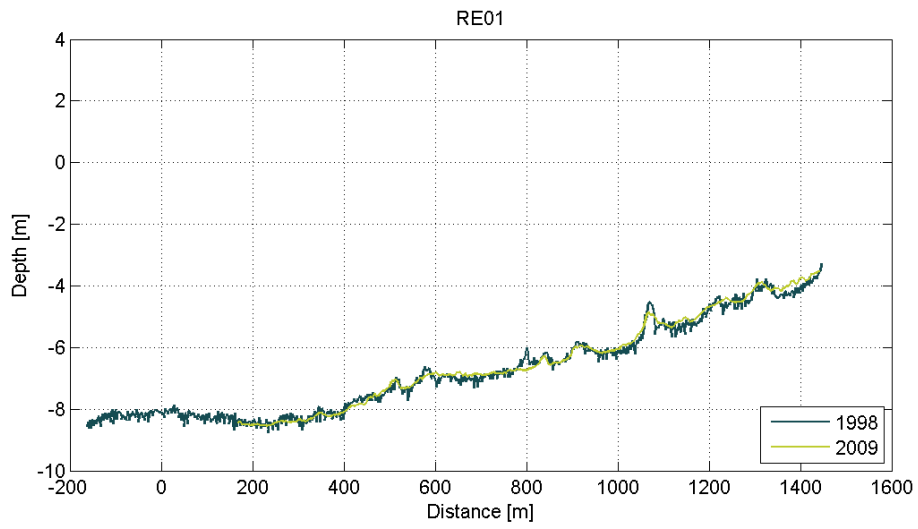
## ***A P P E N D I X B***

### ***Coastal Profiles, South Coast of Lolland***

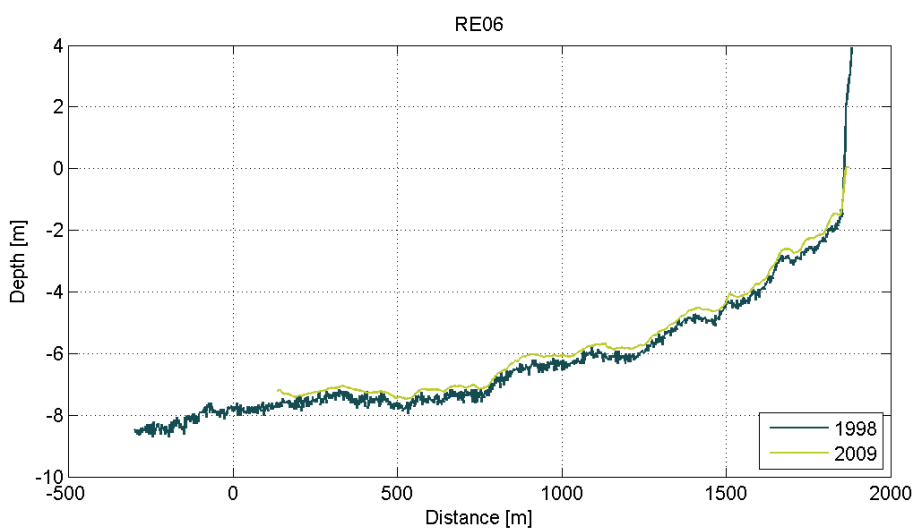
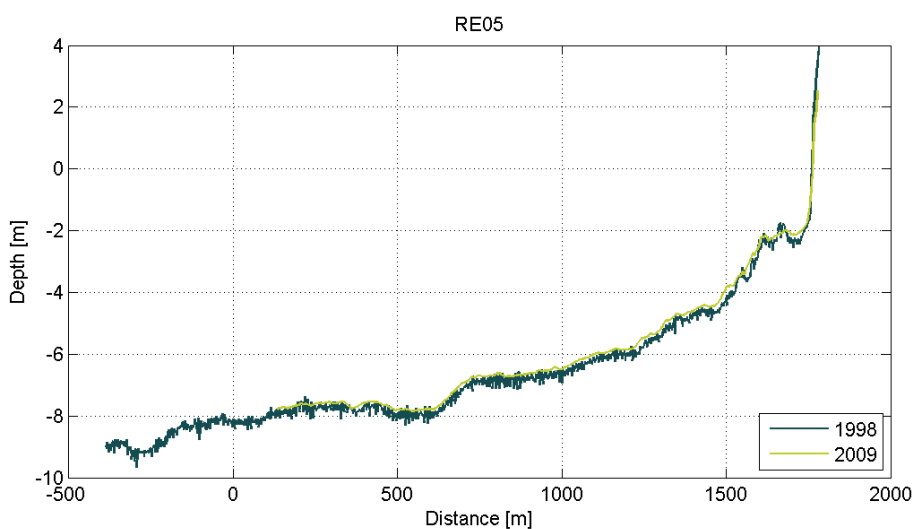
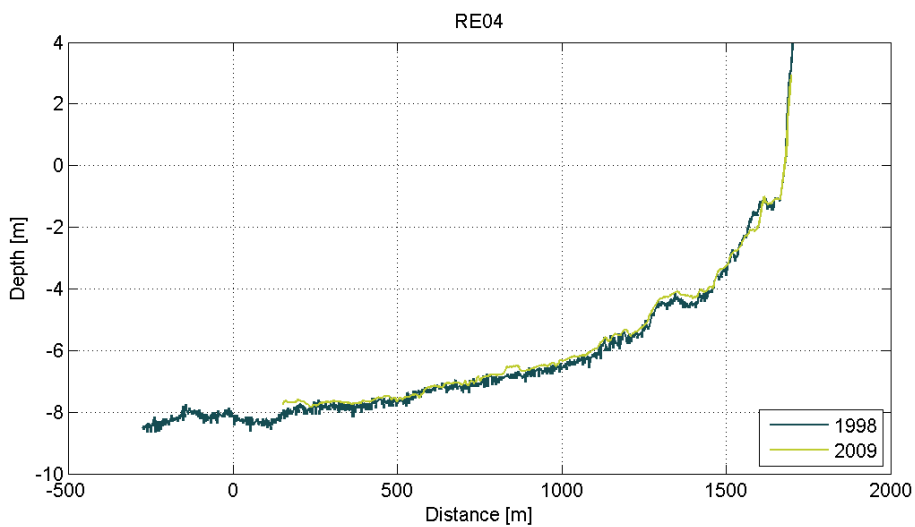


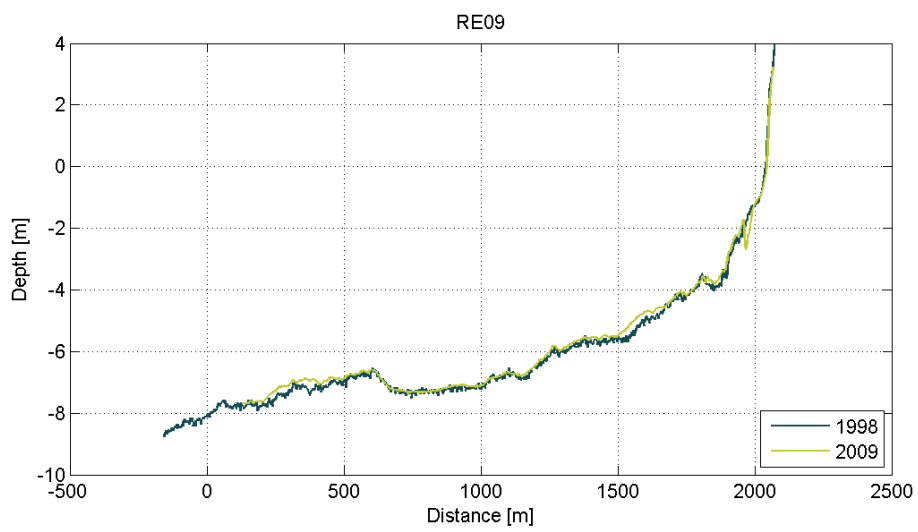
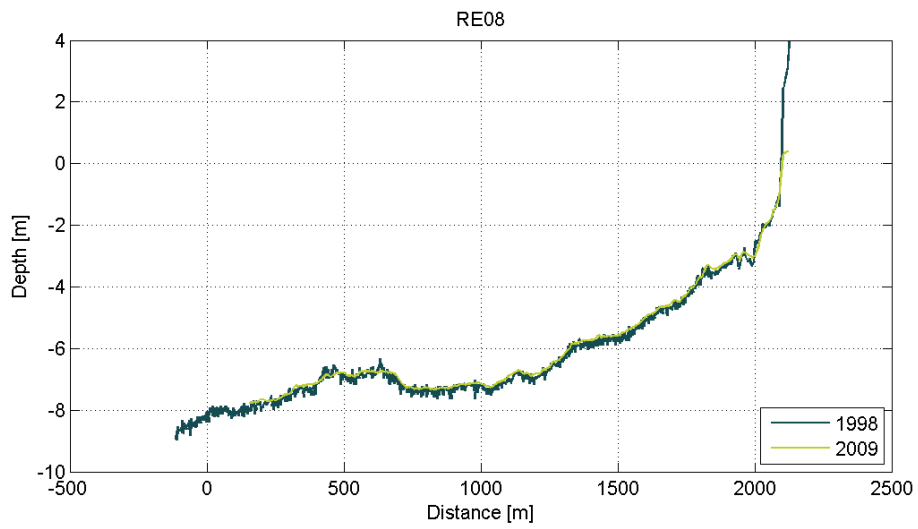
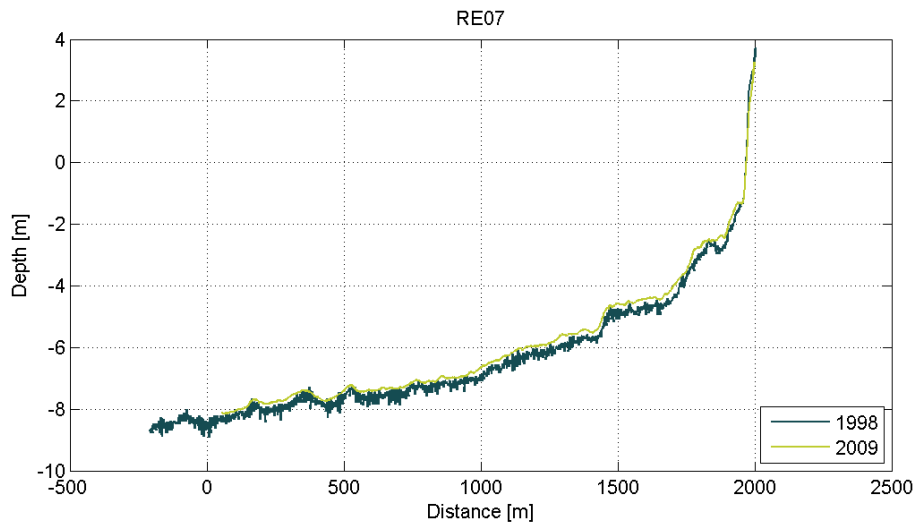




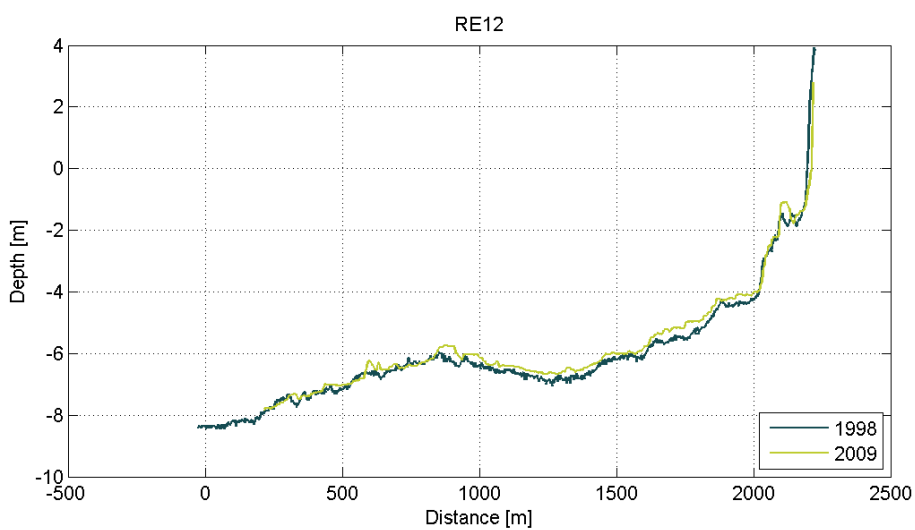
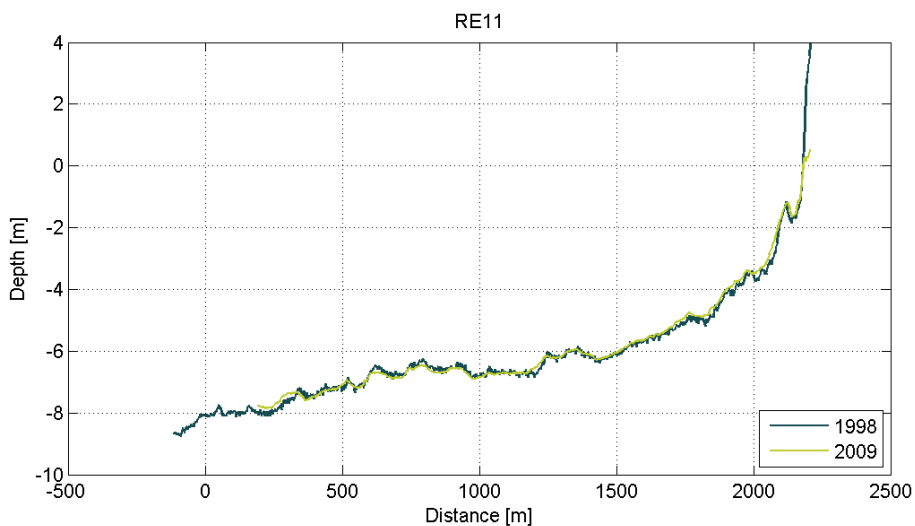
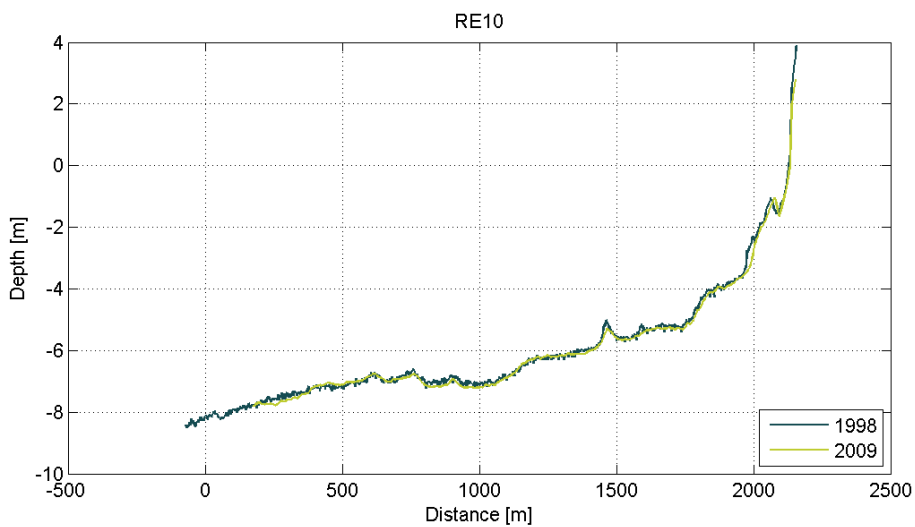


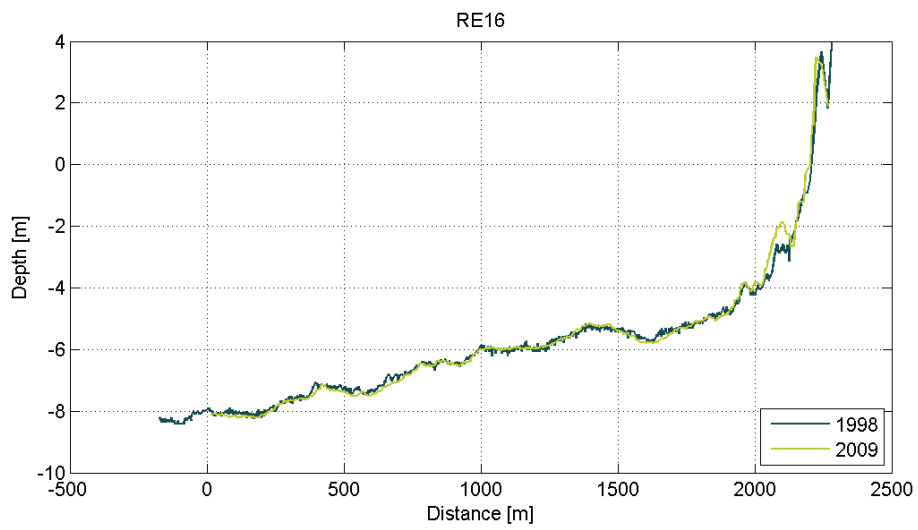
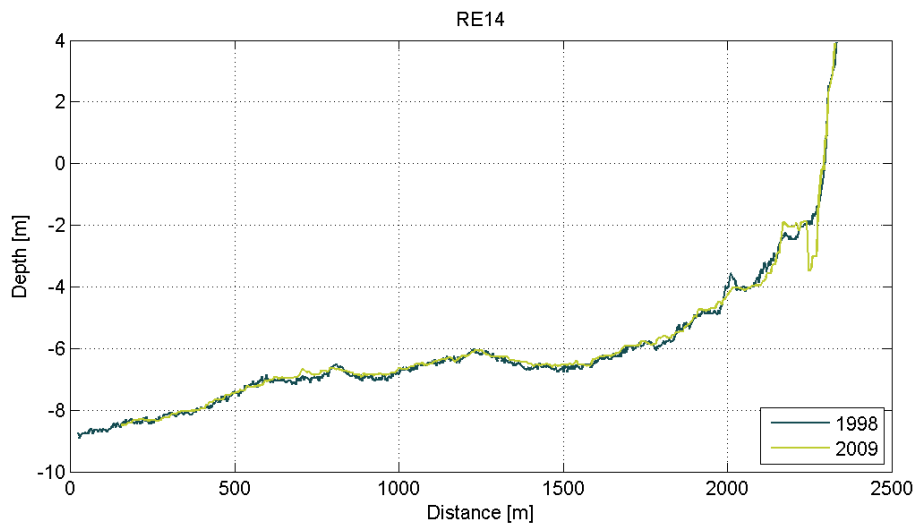
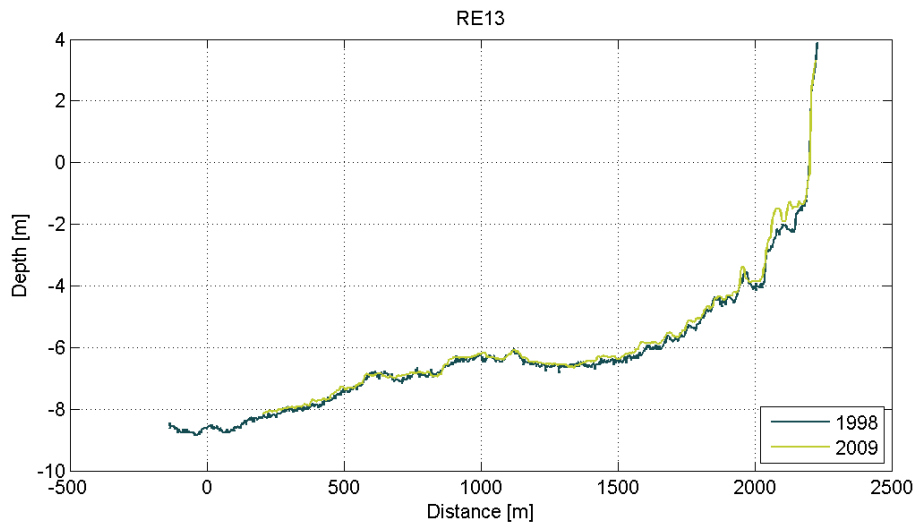




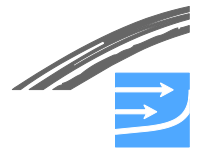






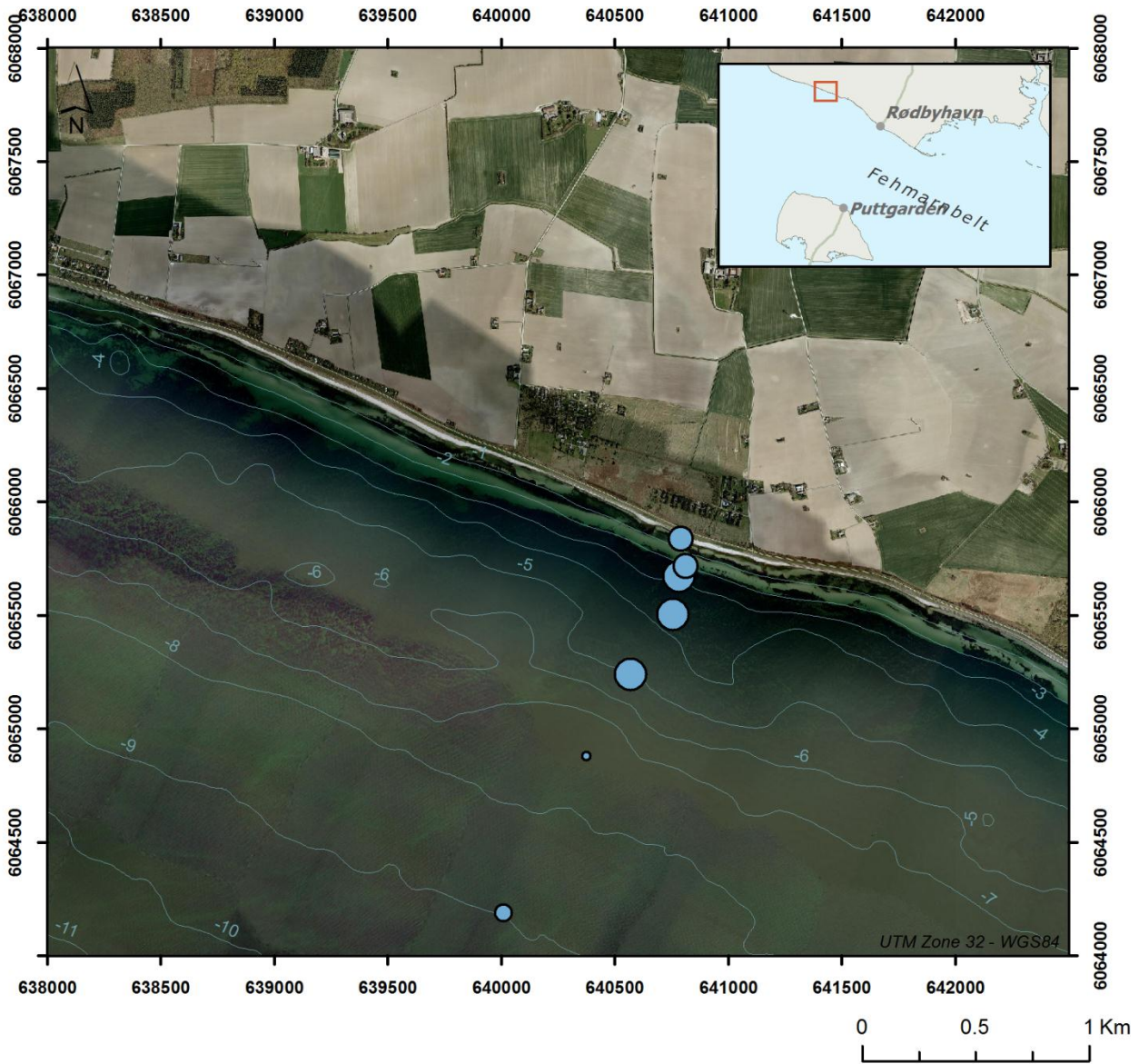
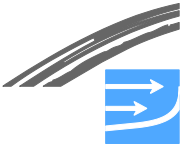






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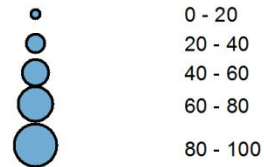
### ***Sea Bed Conditions, South Coast of Lolland***



**Seabed samples 1998 d50 (mm)**



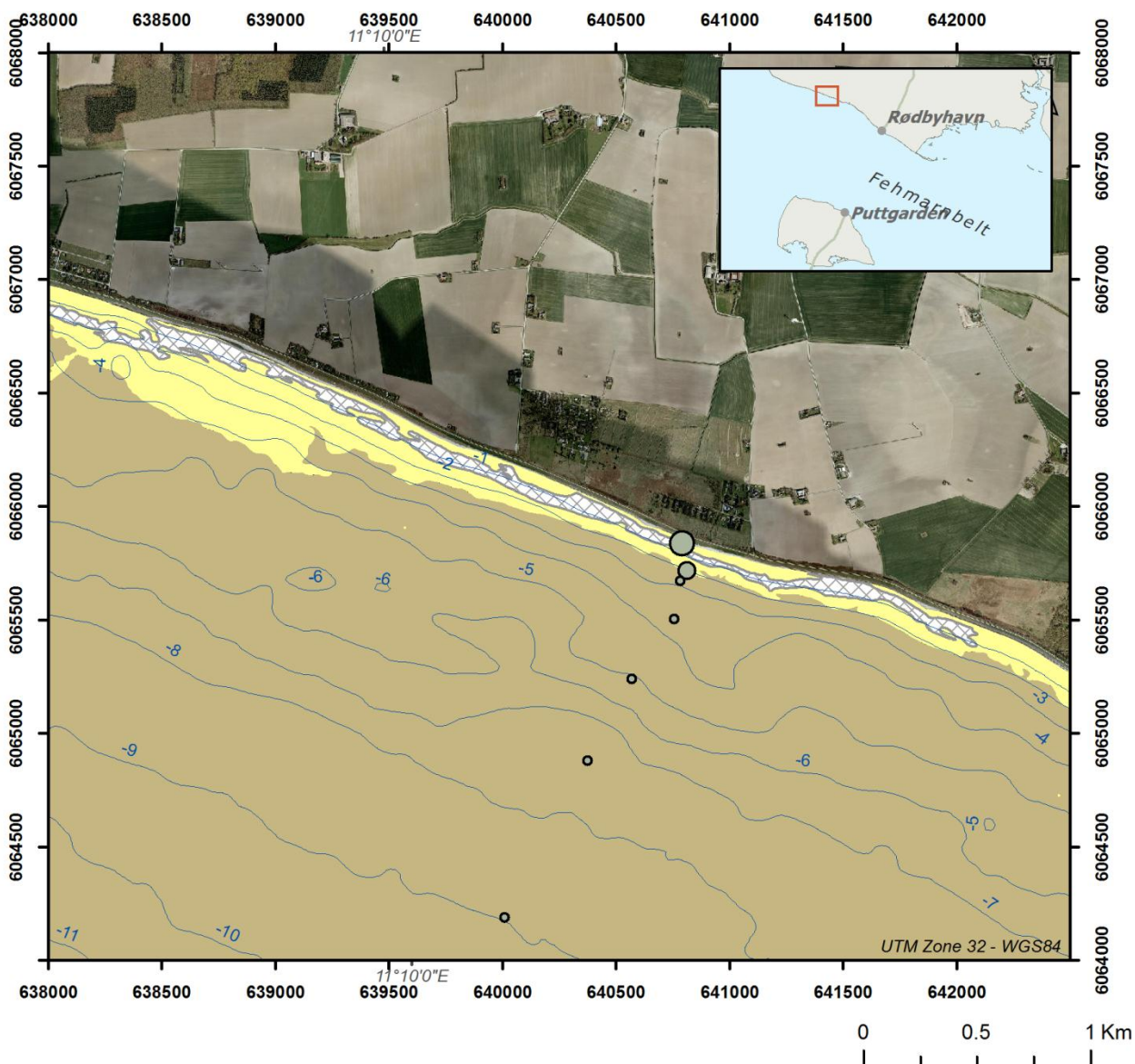
**Suitable substrate for macroalgae cover(%)**



**Seabed samples 2009 d50 (mm)**







**Seabed samples 1998 d50 (mm)**

- + 0.0 - 0.03 (Medium Silt and smaller)
- + 0.04 - 0.06 (Coarse Silt)
- + 0.07 - 0.13 (Very Fine Sand)
- + 0.14 - 0.25 (Fine Sand)
- + 0.26 - 0.50 (Medium Sand)
- + 0.51 - 1.00 (Coarse Sand)
- + 1.01 - 4.00 (Very Coarse Sand and larger)
- + d50 N/A

**Seabed samples 2009 d50 (mm)**

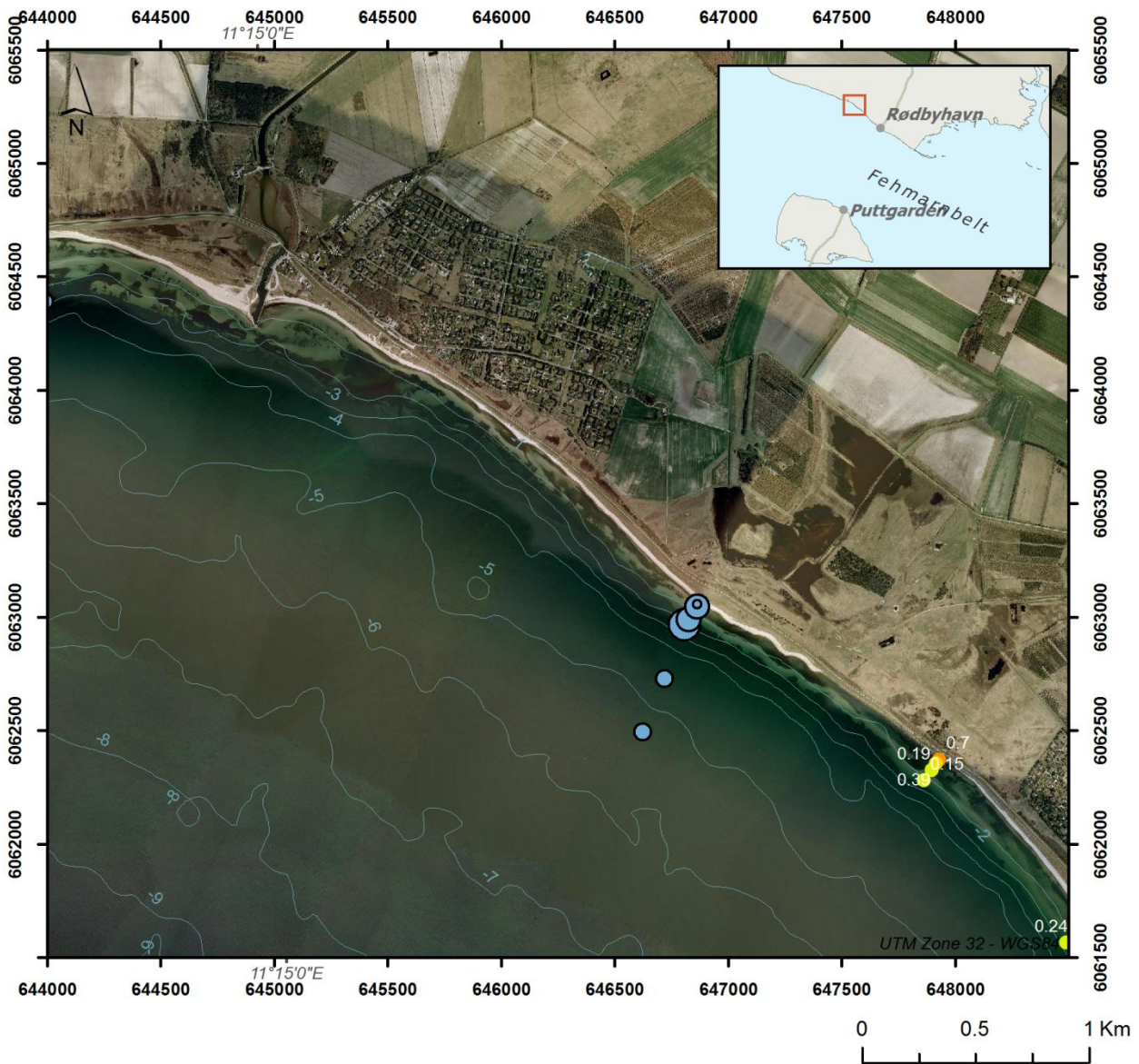
- 0.0 - 0.03 (Medium Silt and smaller)
- 0.04 - 0.06 (Coarse Silt)
- 0.07 - 0.13 (Very Fine Sand)
- 0.14 - 0.25 (Fine Sand)
- 0.26 - 0.50 (Medium Sand)
- 0.51 - 1.00 (Coarse Sand)
- 1.01 - 4.00 (Very Coarse Sand and larger)
- d50 N/A

**Substrate**

- Coarse sediment/Boulders
- Sand
- Muddy sand
- Sandy mud
- Thin sandy mud
- Mud
- Mixed sediment/Boulders
- Artificial hard substrate
- Unknown
- No information

**Sand cover (%)**

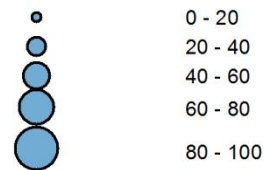
- 0 - 20
- 20 - 40
- 40 - 60
- 60 - 80
- 80 - 100



### Seabed samples 1998 d50 (mm)



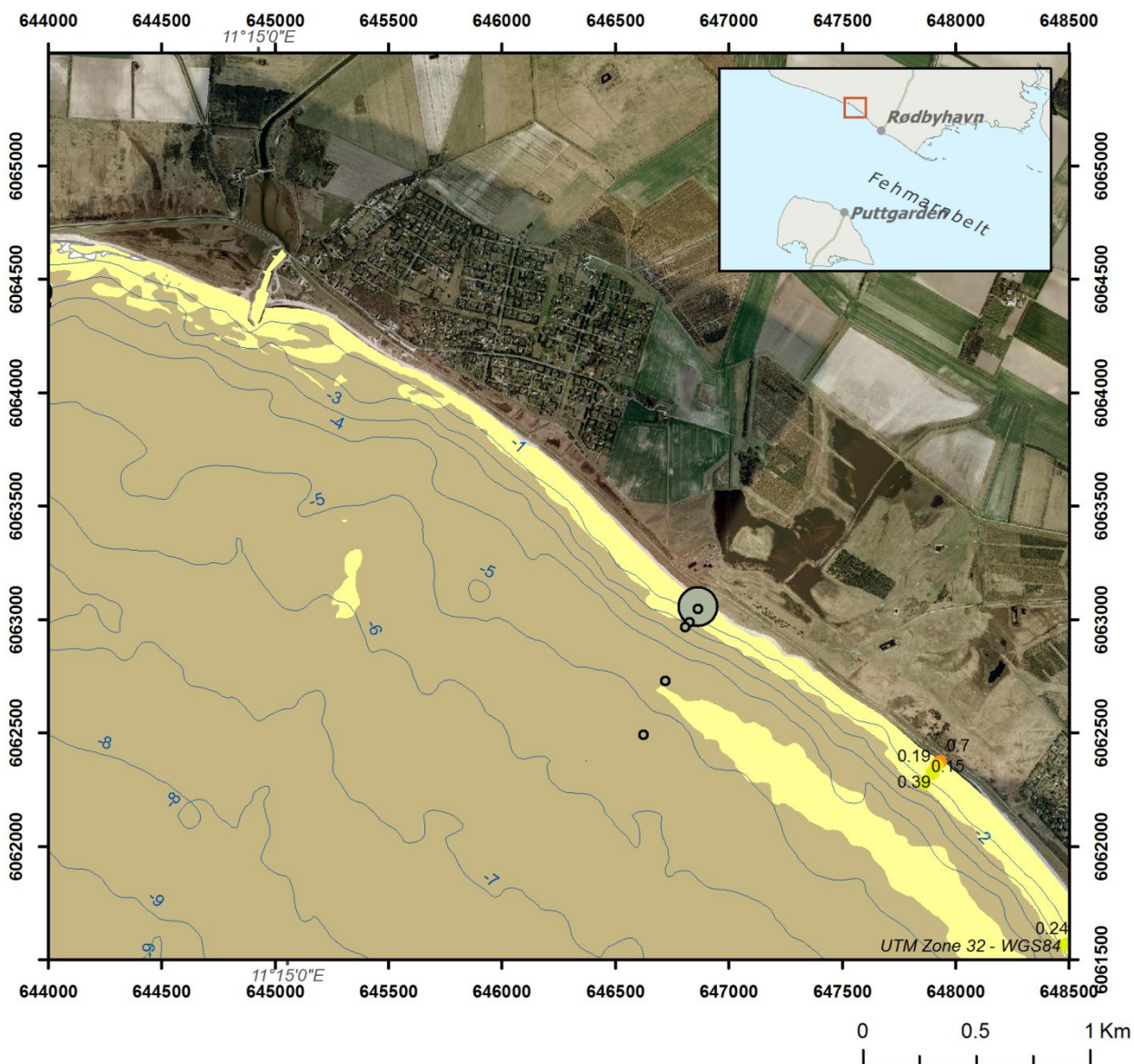
### Suitable substrate for macroalgae cover(%)



### Seabed samples 2009 d50 (mm)







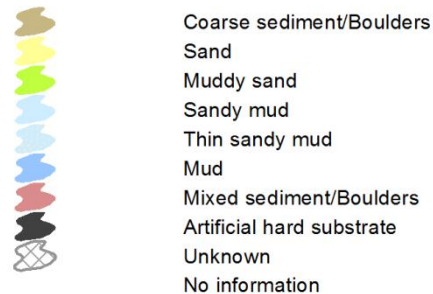
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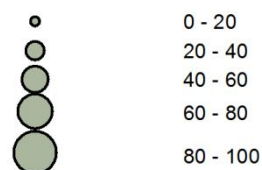
### Seabed samples 2009 d50 (mm)



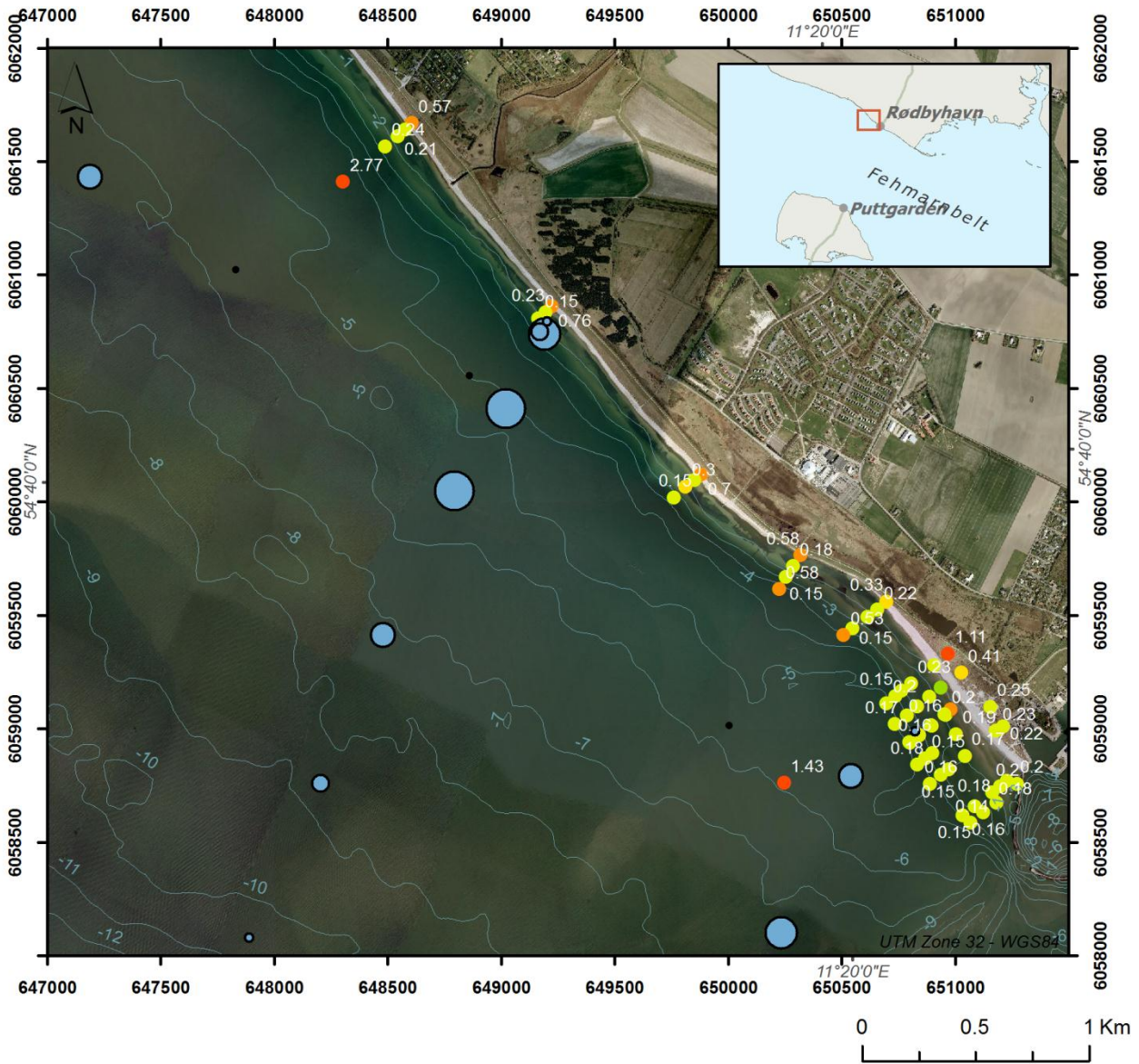
### Substrate



### Sand cover (%)



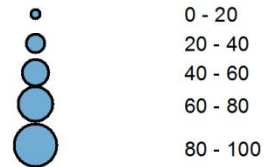




### Seabed samples 1998 d50 (mm)

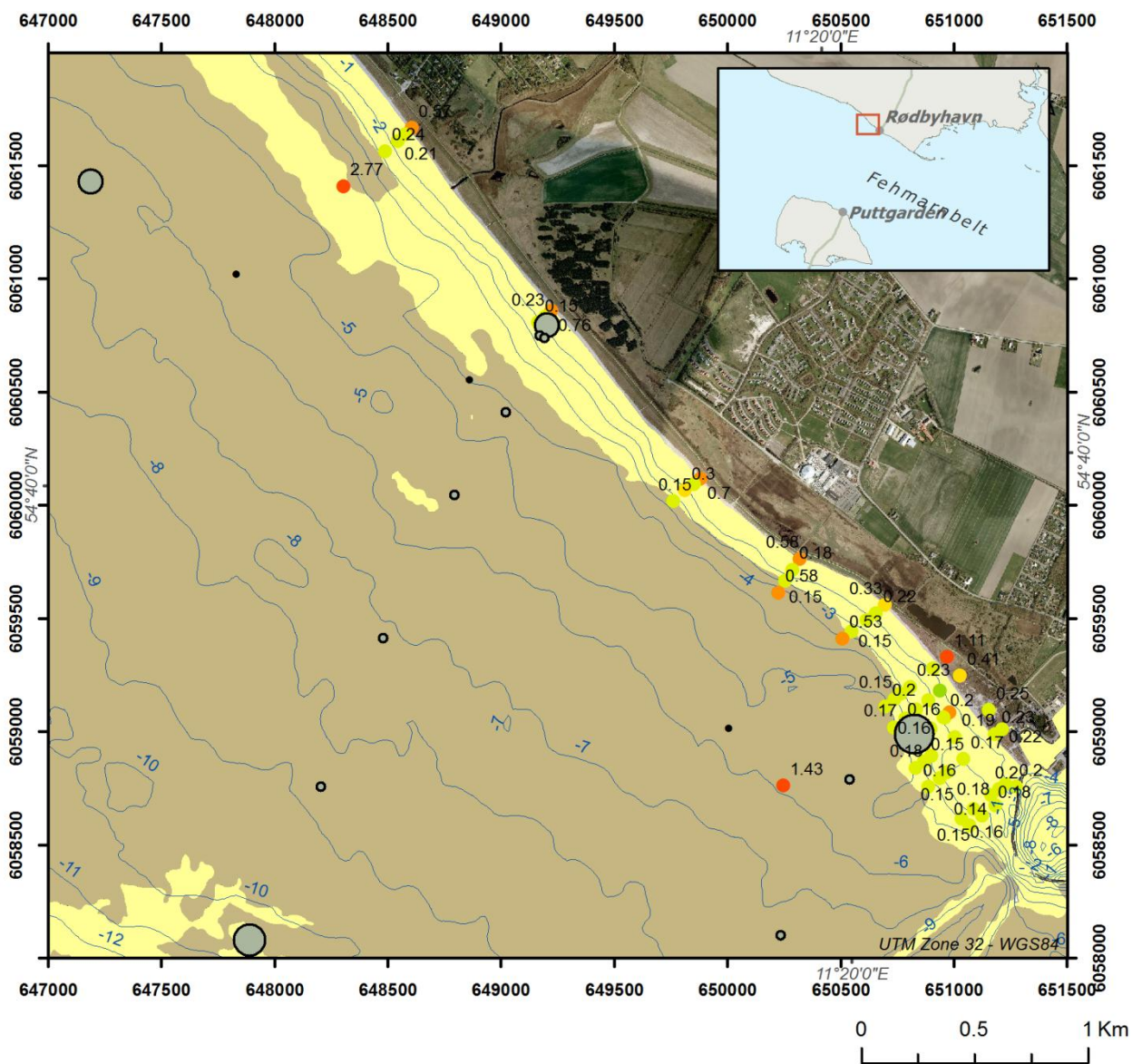


### Suitable substrate for macroalgae cover(%)



### Seabed samples 2009 d50 (mm)





**Seabed samples 1998 d50 (mm)**

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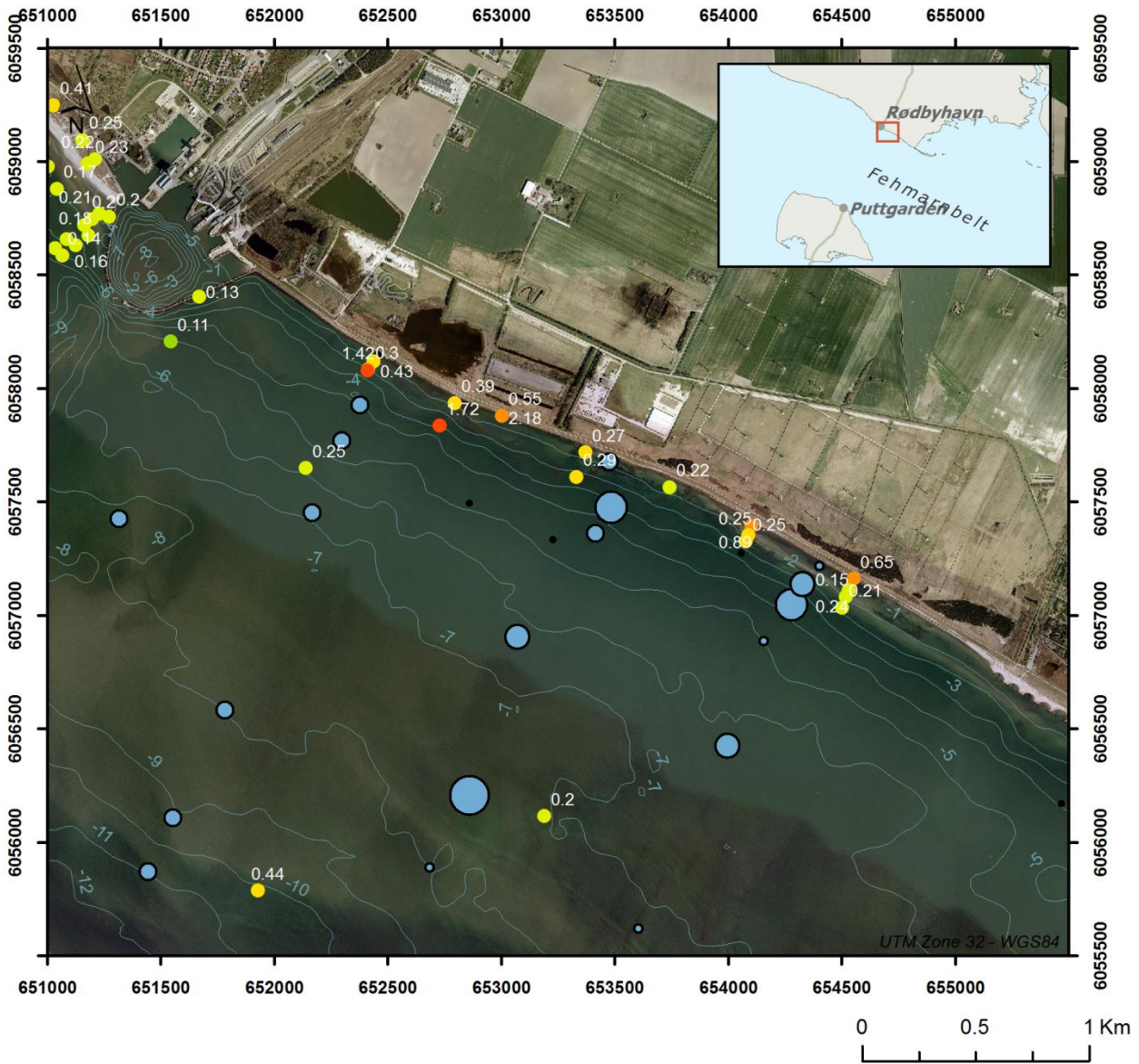
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- Sand
- Muddy sand
- Sandy mud
- Thin sandy mud
- Mud
- Mixed sediment/Boulders
- Artificial hard substrate
- Unknown
- No information

**Sand cover (%)**

- 0 - 20
- 20 - 40
- 40 - 60
- 60 - 80
- 80 - 100

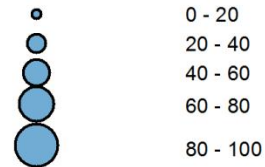




### Seabed samples 1998 d50 (mm)



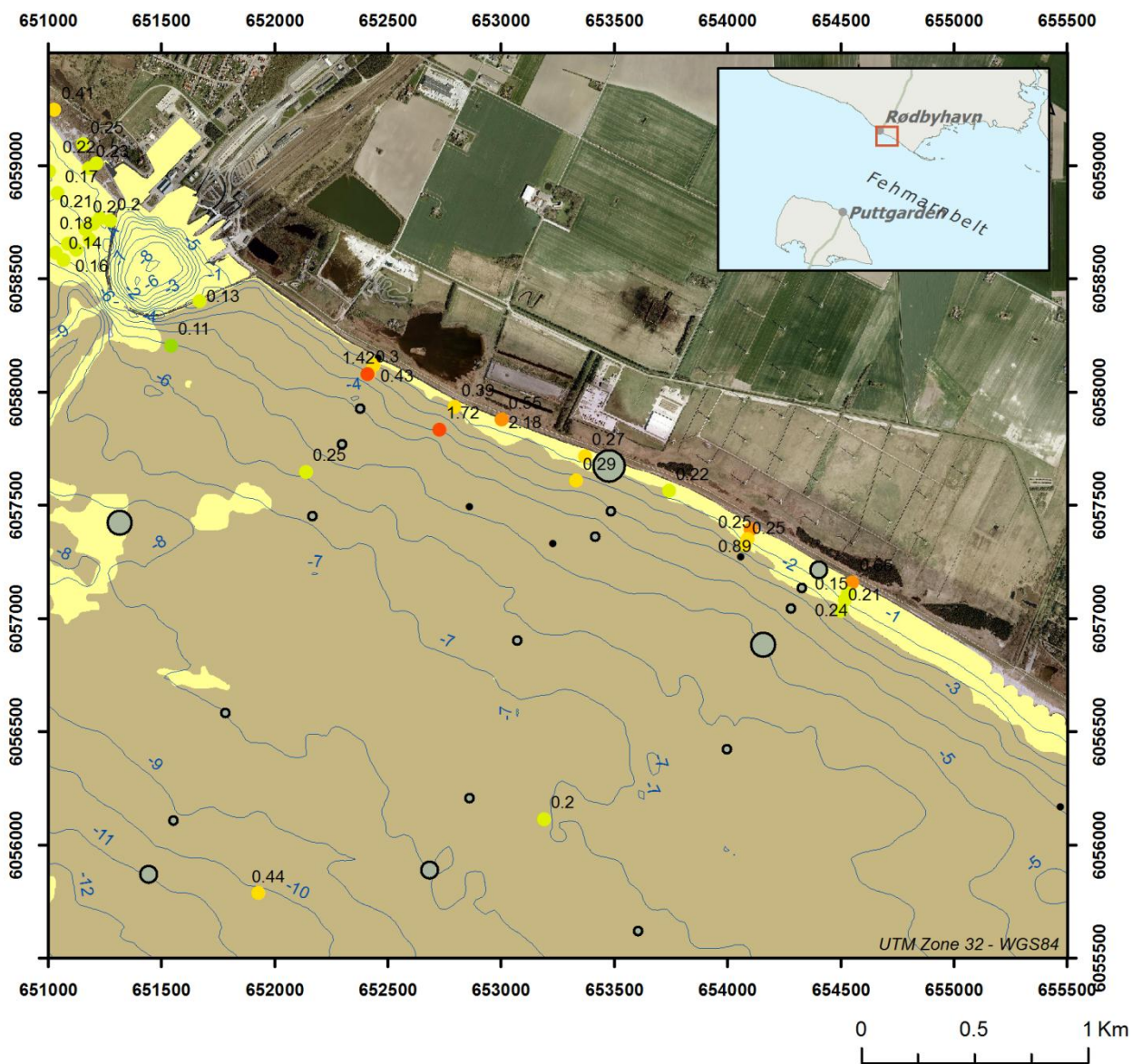
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**Seabed samples 2009 d50 (mm)**

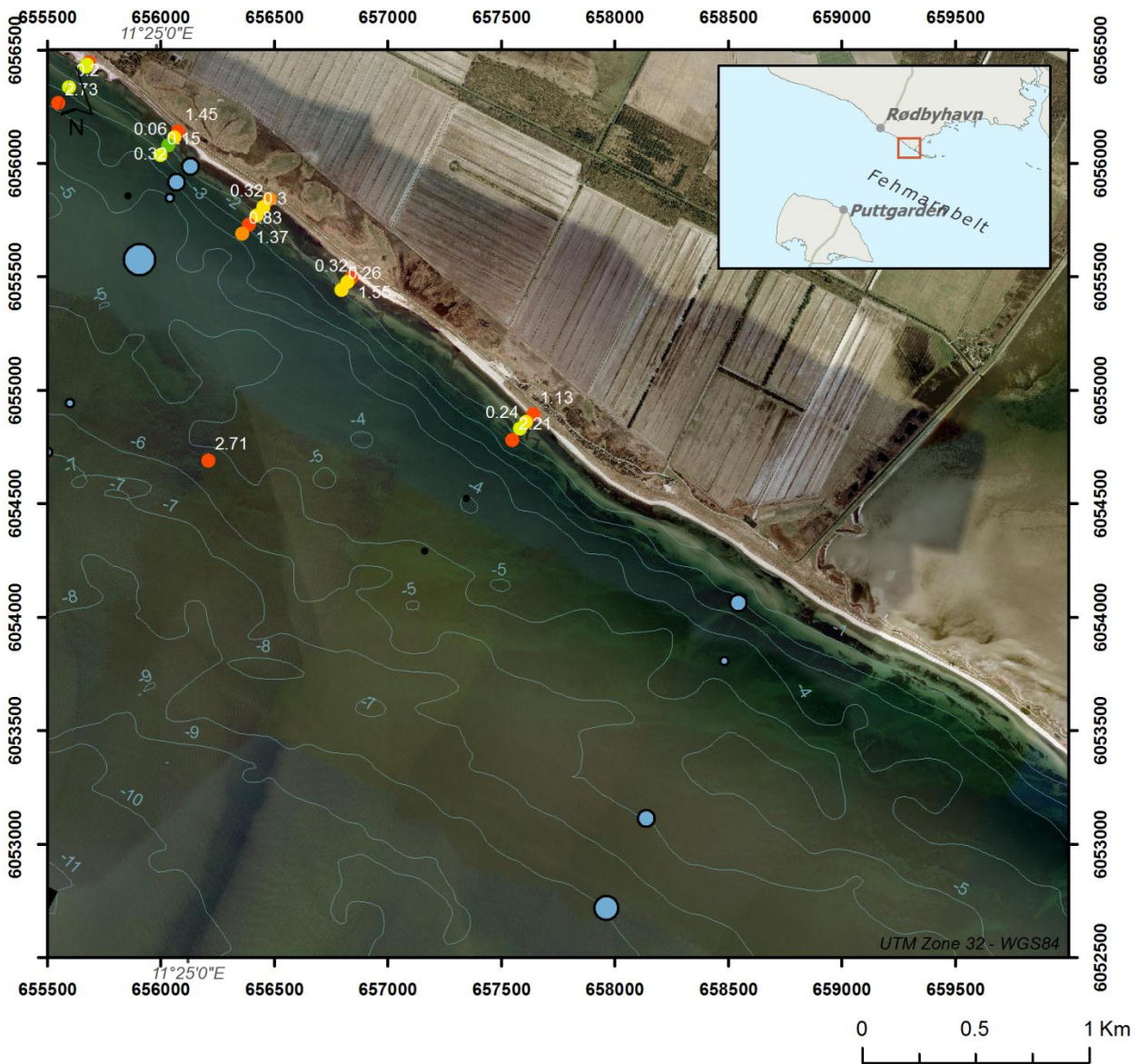
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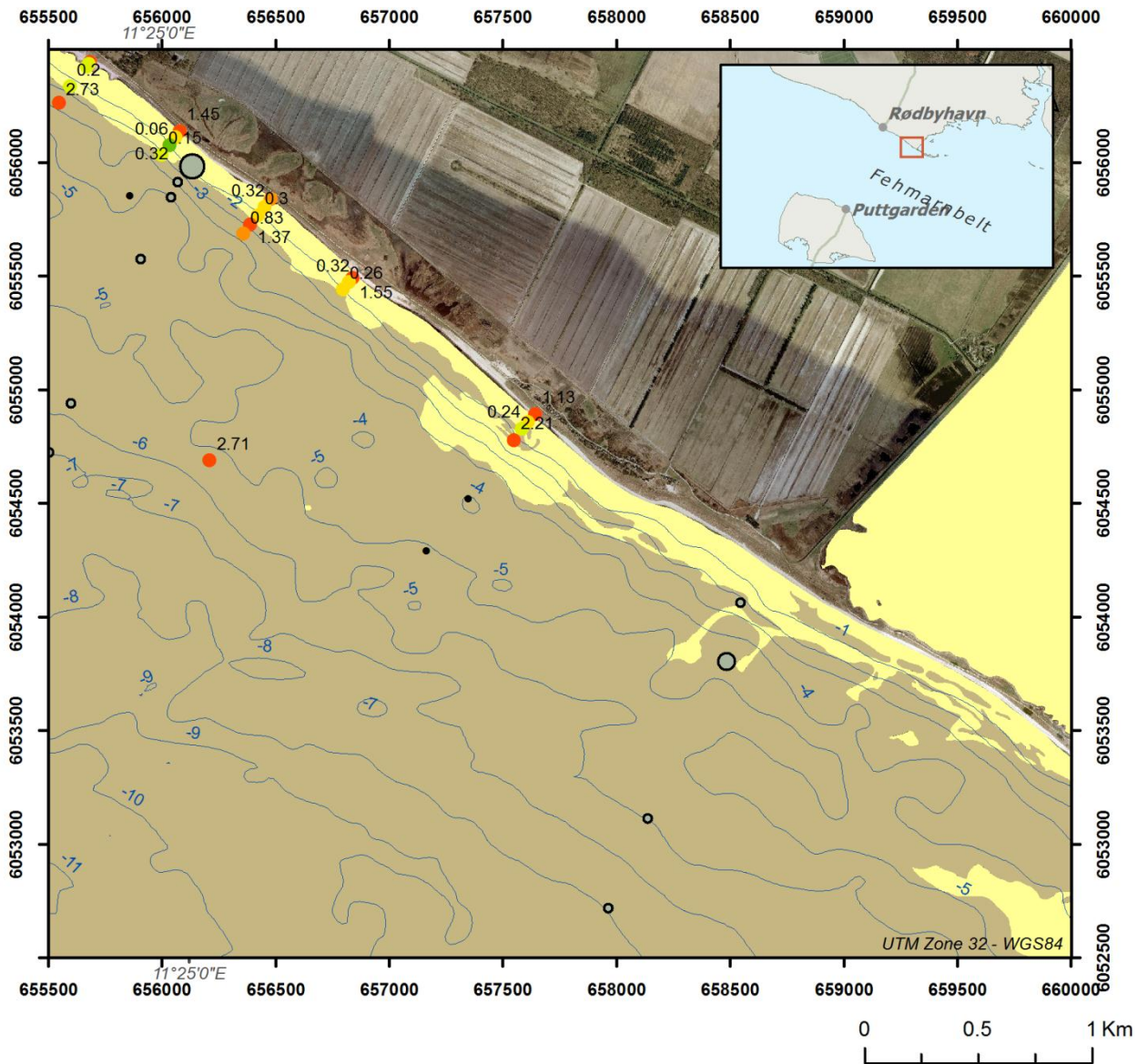
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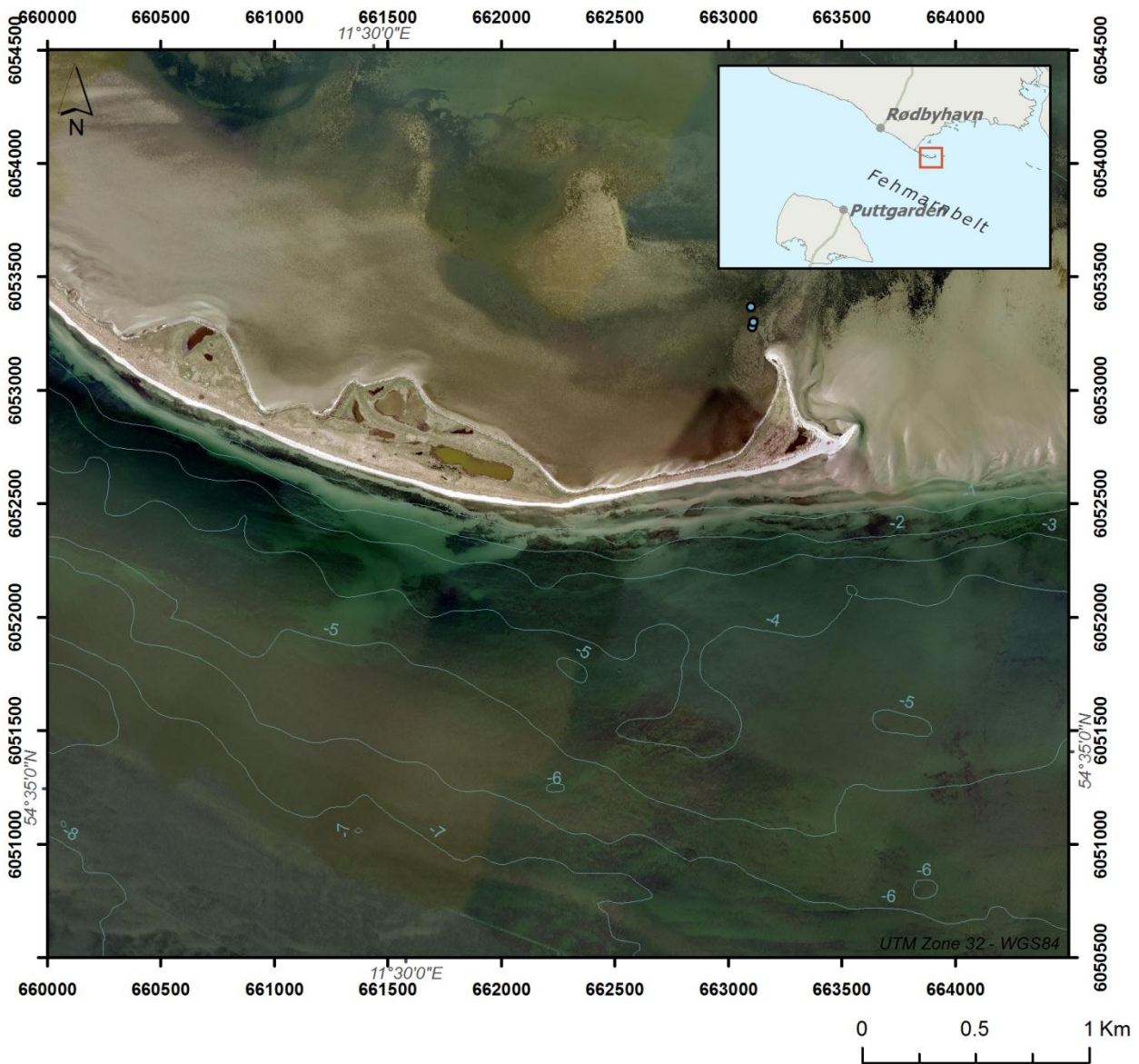
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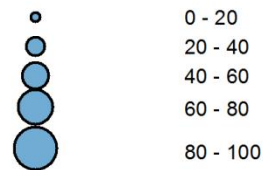




**Seabed samples 1998 d50 (mm)**

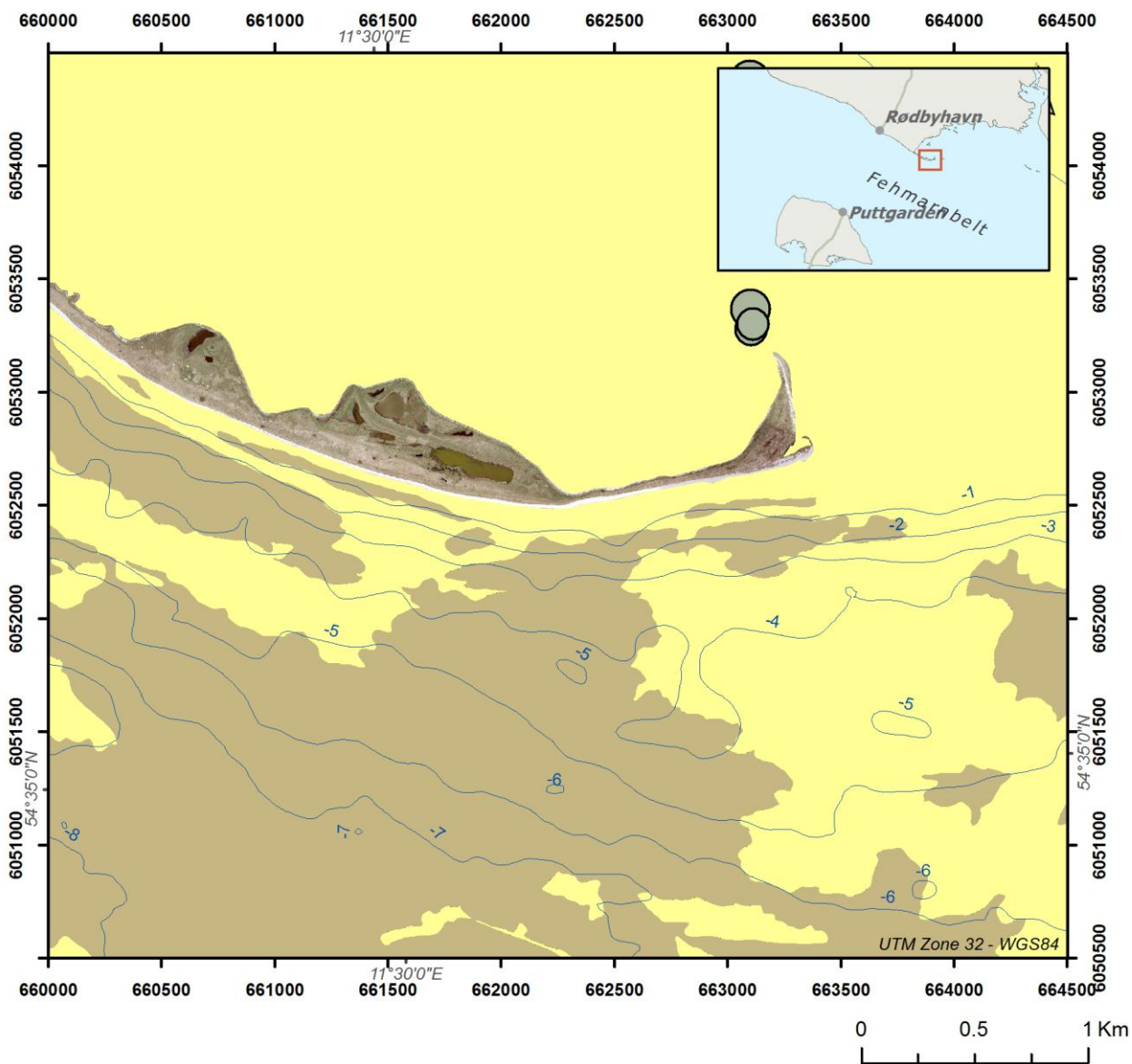


**Suitable substrate for macroalgae cover(%)**



**Seabed samples 2009 d50 (mm)**





**Seabed samples 1998 d50 (mm)**

- + 0.0 - 0.03 (Medium Silt and smaller)
- + 0.04 - 0.06 (Coarse Silt)
- + 0.07 - 0.13 (Very Fine Sand)
- + 0.14 - 0.25 (Fine Sand)
- + 0.26 - 0.50 (Medium Sand)
- + 0.51 - 1.00 (Coarse Sand)
- + 1.01 - 4.00 (Very Coarse Sand and larger)
- + d50 N/A

**Seabed samples 2009 d50 (mm)**

- 0.0 - 0.03 (Medium Silt and smaller)
- 0.04 - 0.06 (Coarse Silt)
- 0.07 - 0.13 (Very Fine Sand)
- 0.14 - 0.25 (Fine Sand)
- 0.26 - 0.50 (Medium Sand)
- 0.51 - 1.00 (Coarse Sand)
- 1.01 - 4.00 (Very Coarse Sand and larger)
- d50 N/A

**Substrate**

- Coarse sediment/Boulders
- Sand
- Muddy sand
- Sandy mud
- Thin sandy mud
- Mud
- Mixed sediment/Boulders
- Artificial hard substrate
- Unknown
- No information

**Sand cover (%)**

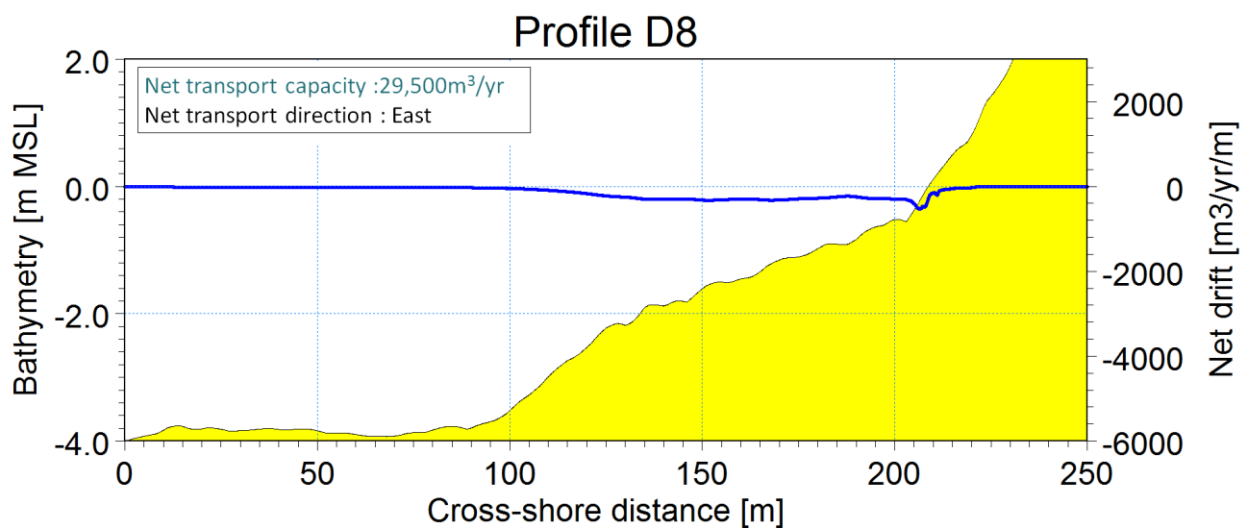
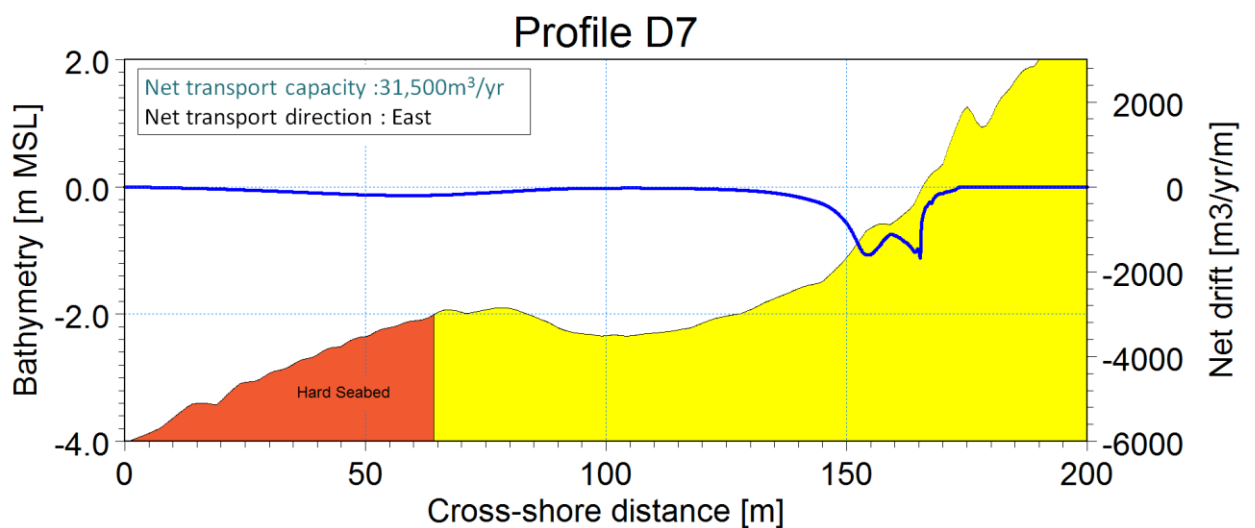
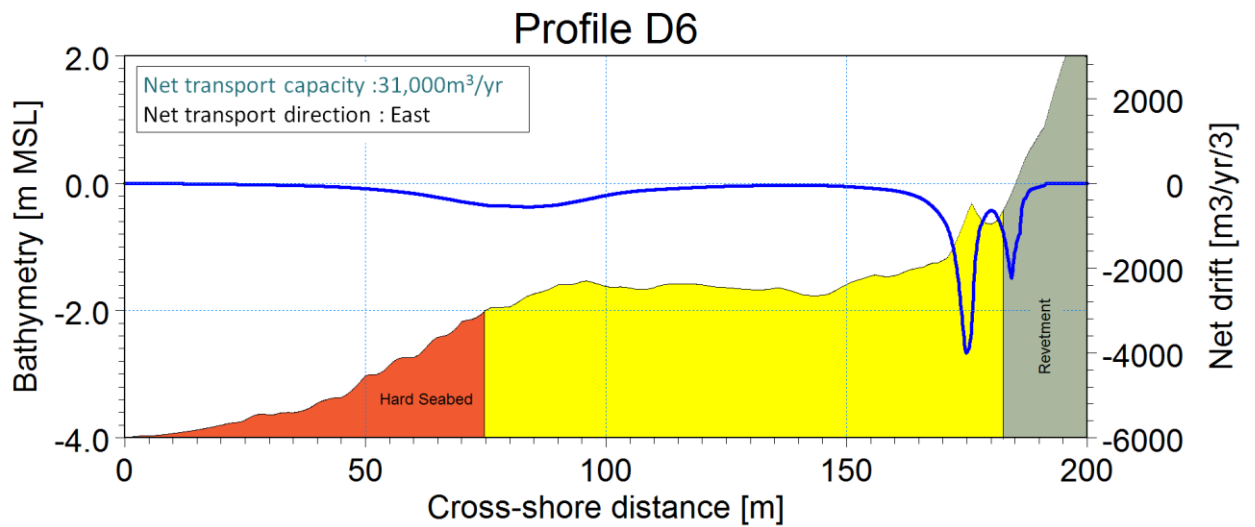
- 0 - 20
- 20 - 40
- 40 - 60
- 60 - 80
- 80 - 100

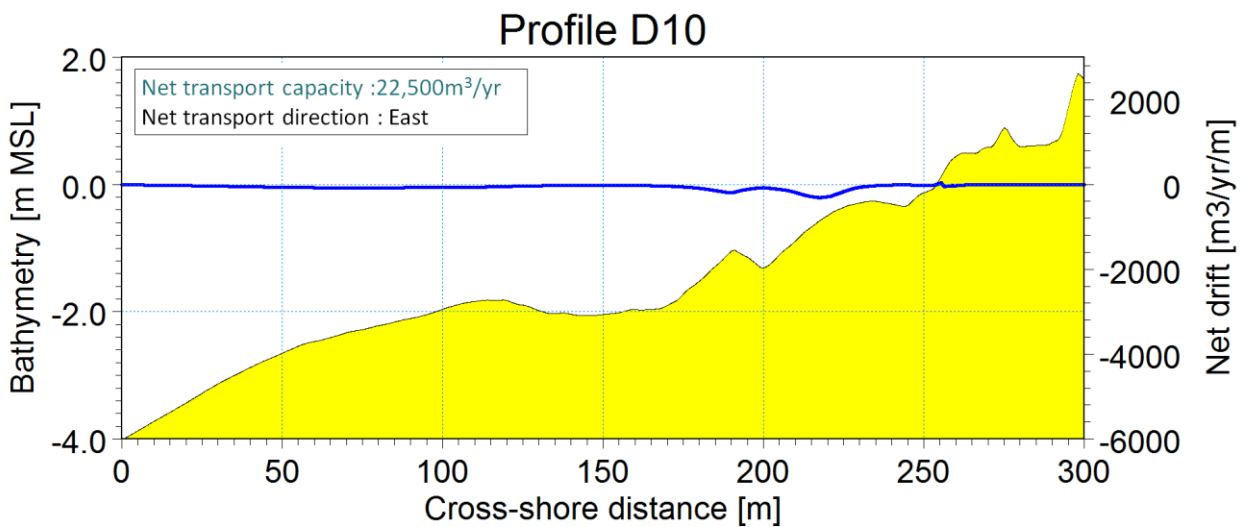
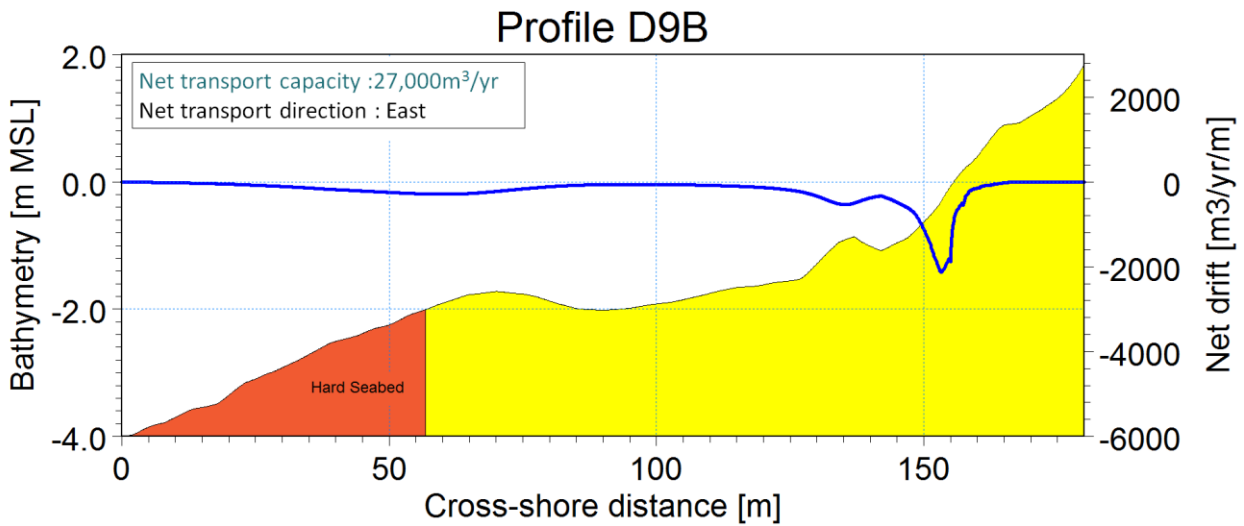
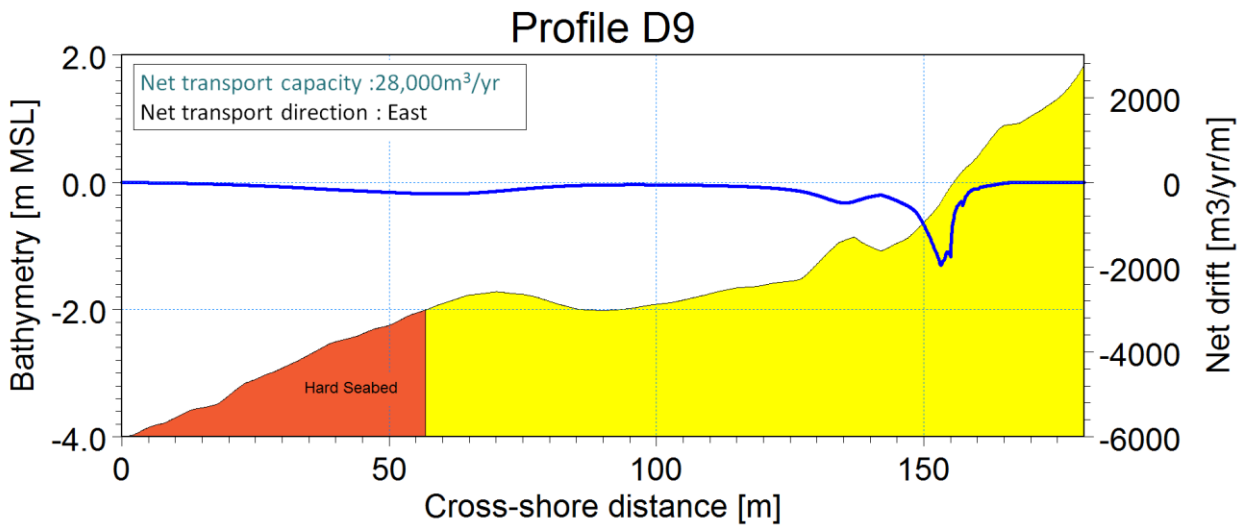


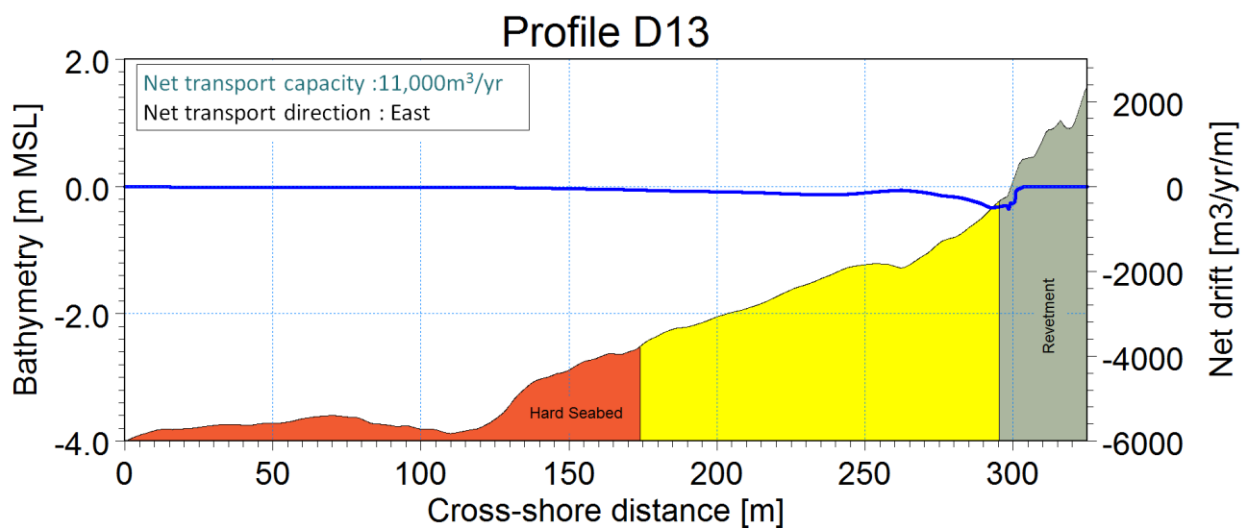
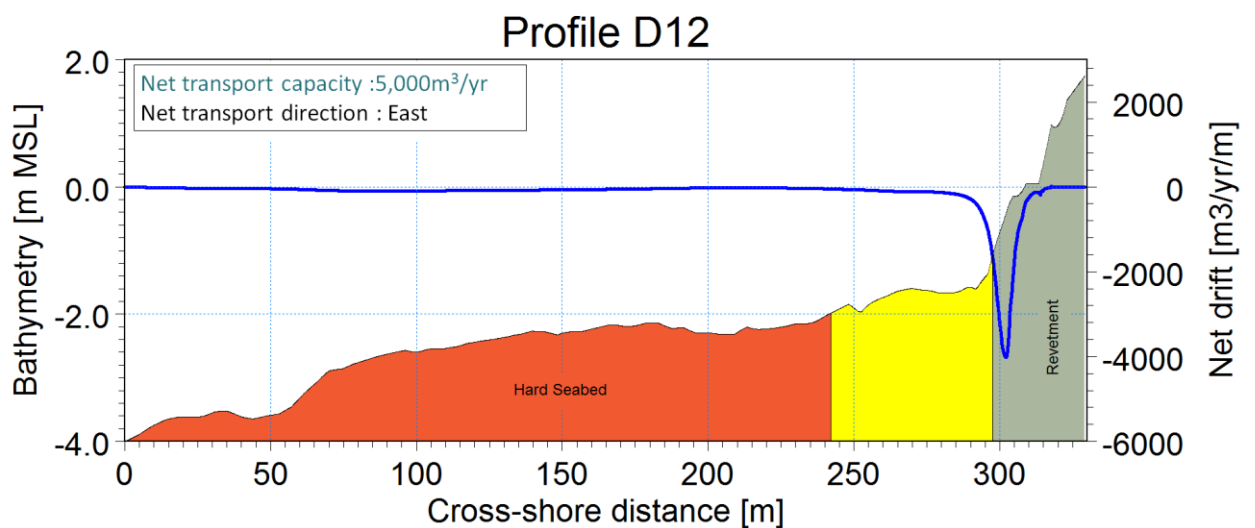
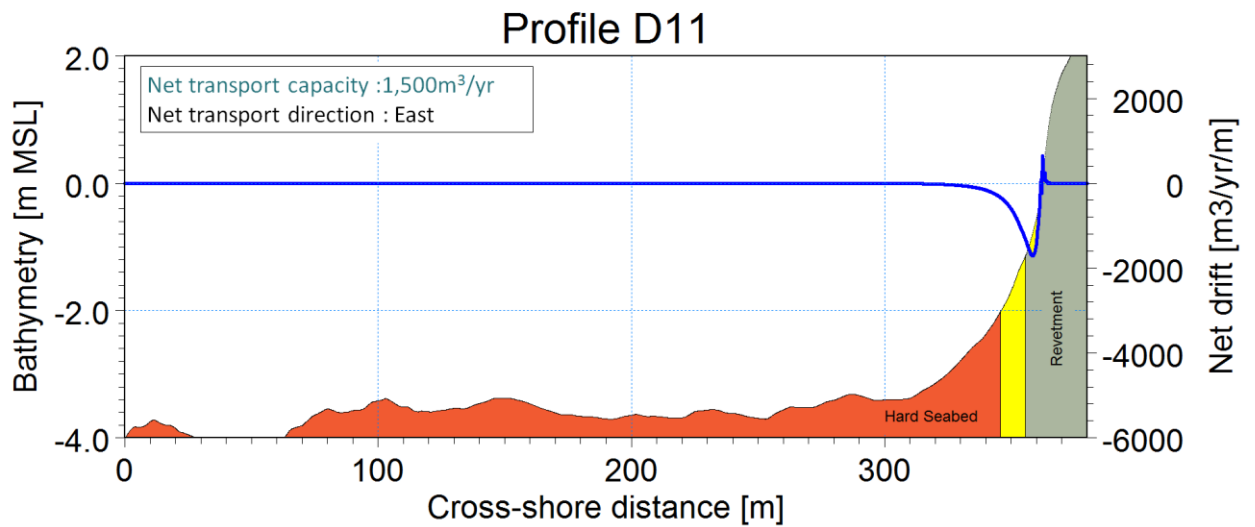
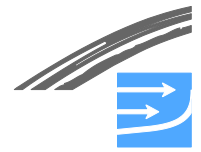
## ***A P P E N D I X D***

### ***Distribution of Net Annual Transport in the Coastal Profile, South Coast of Lolland***

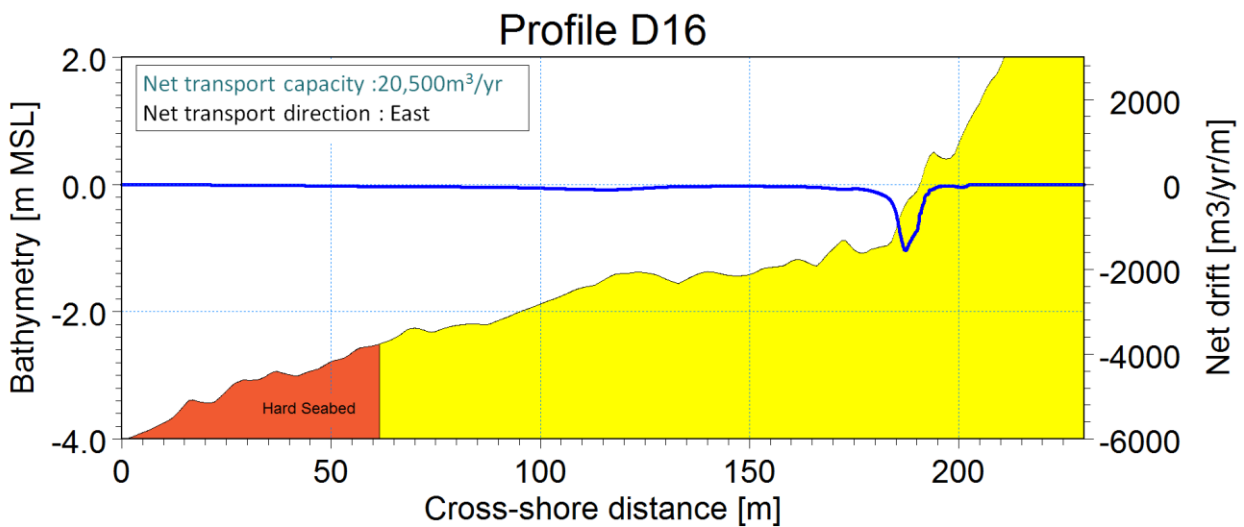
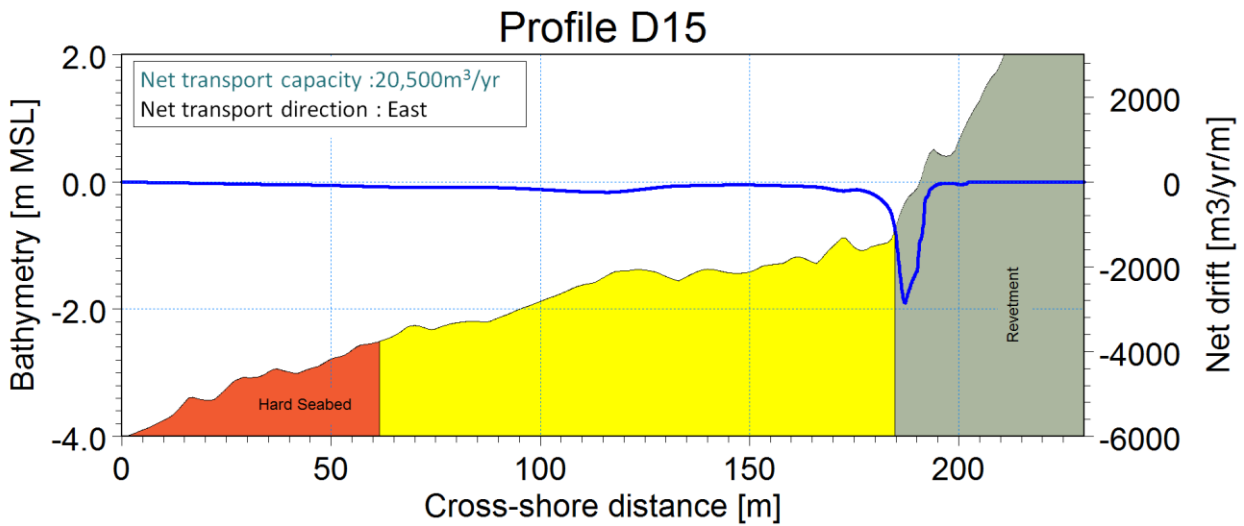
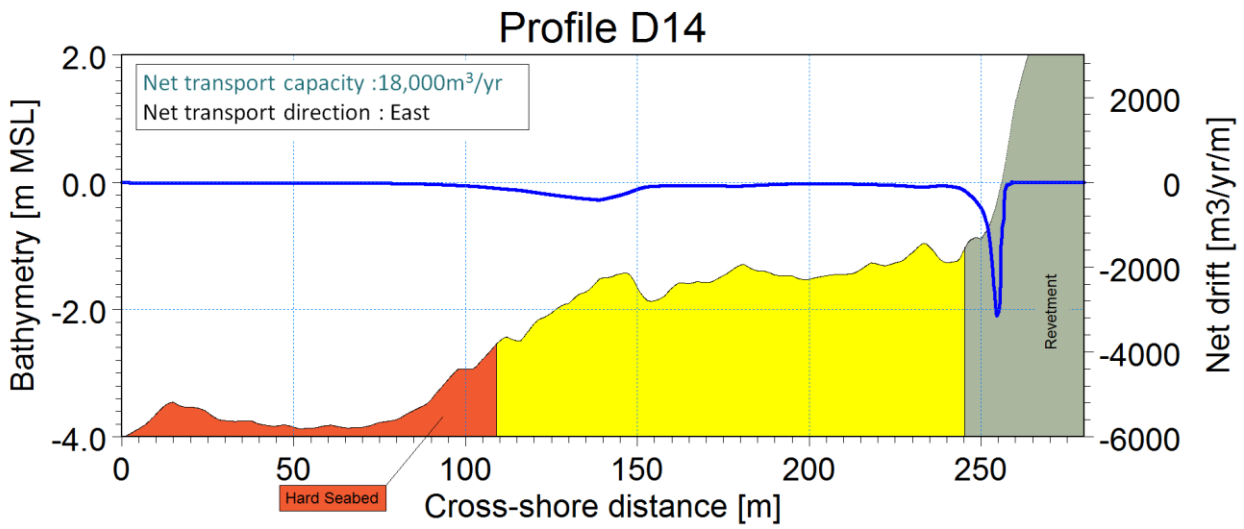


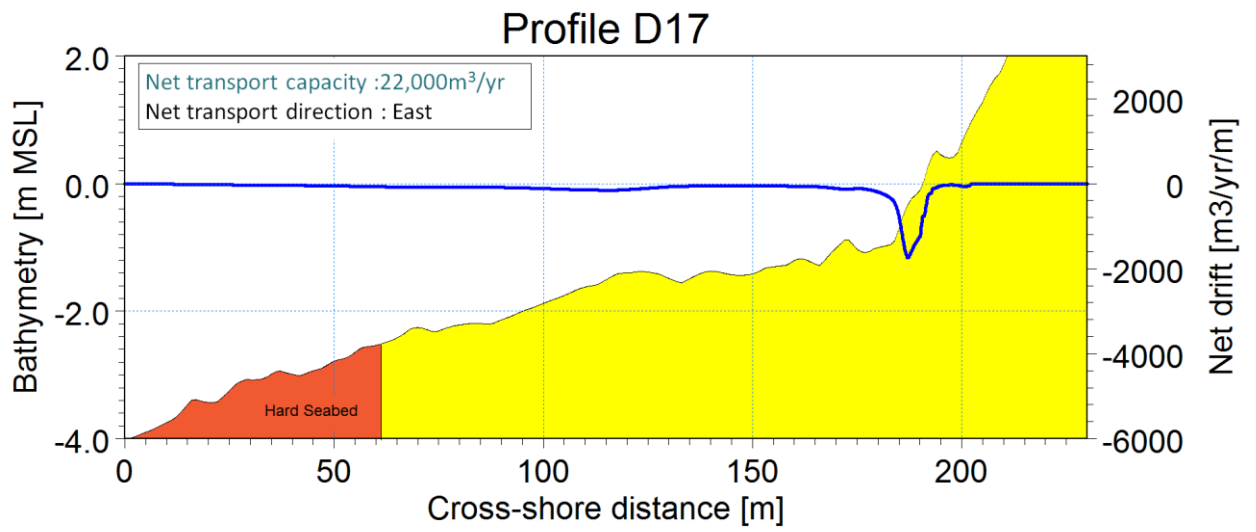
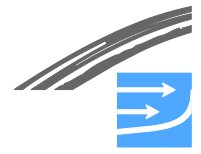










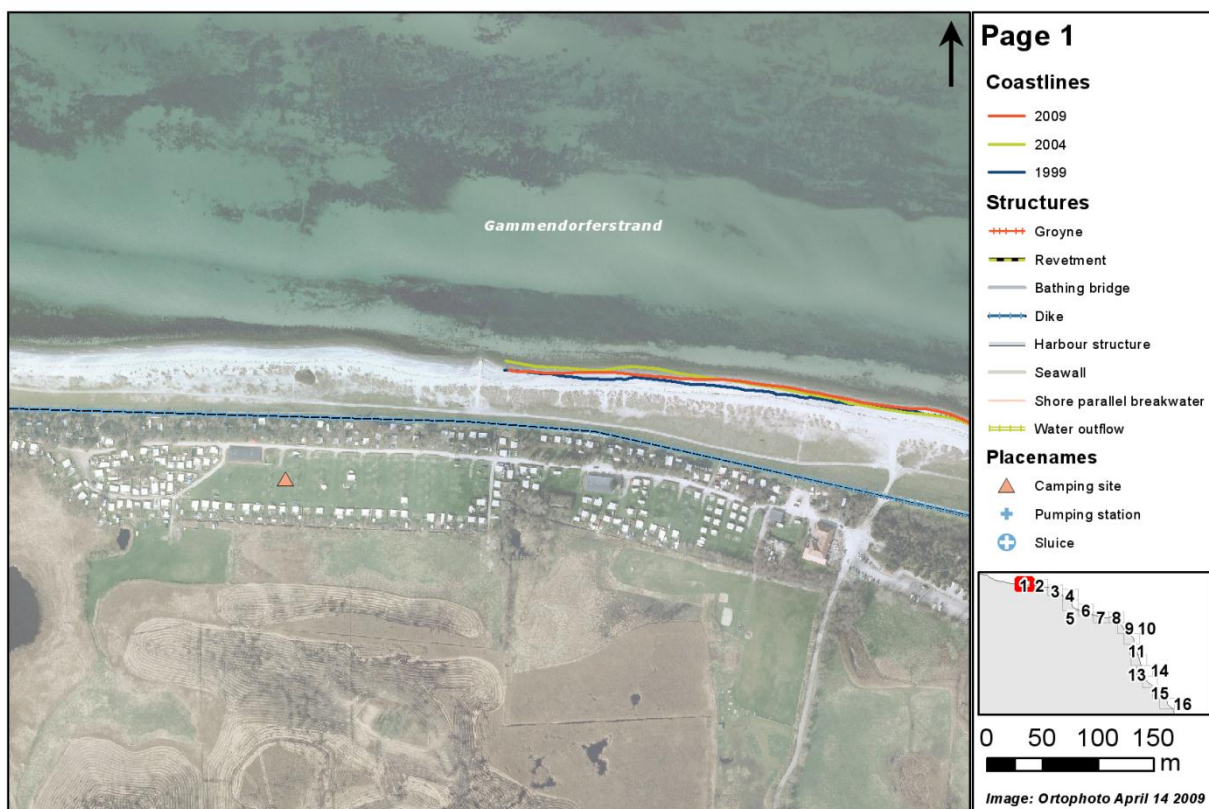
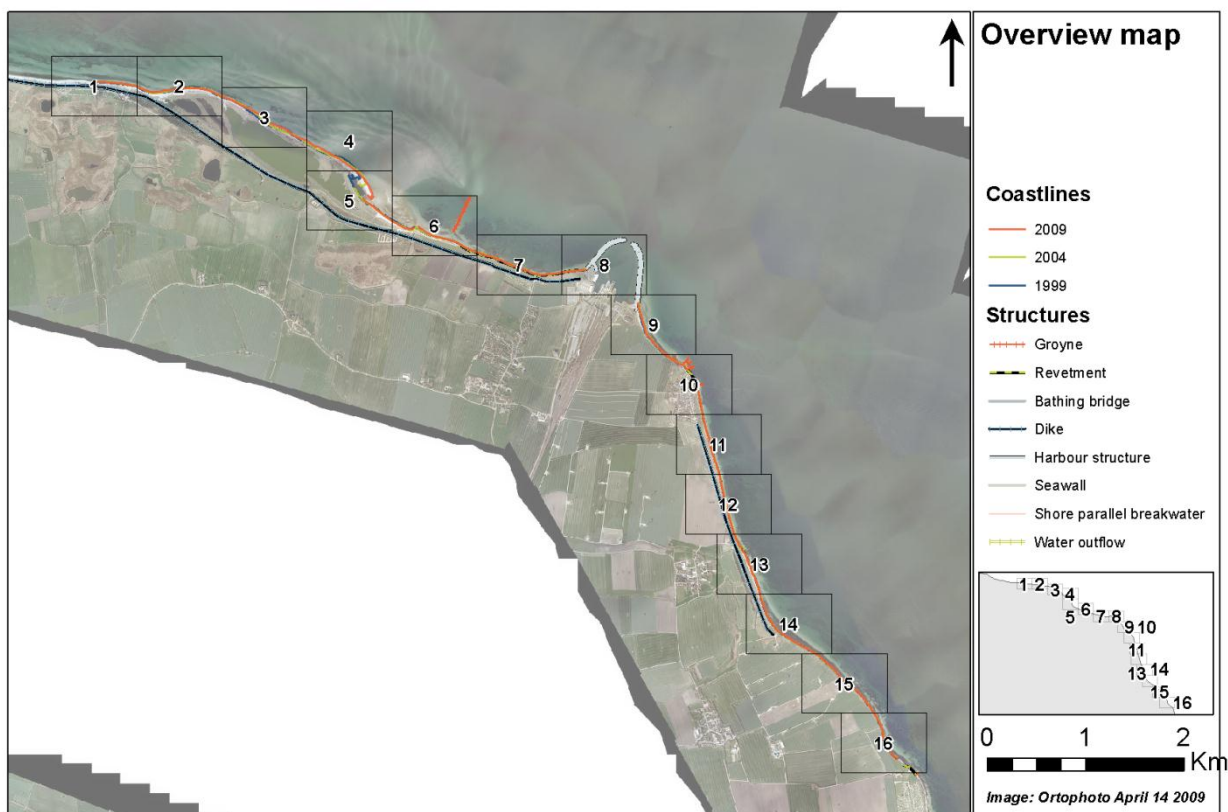


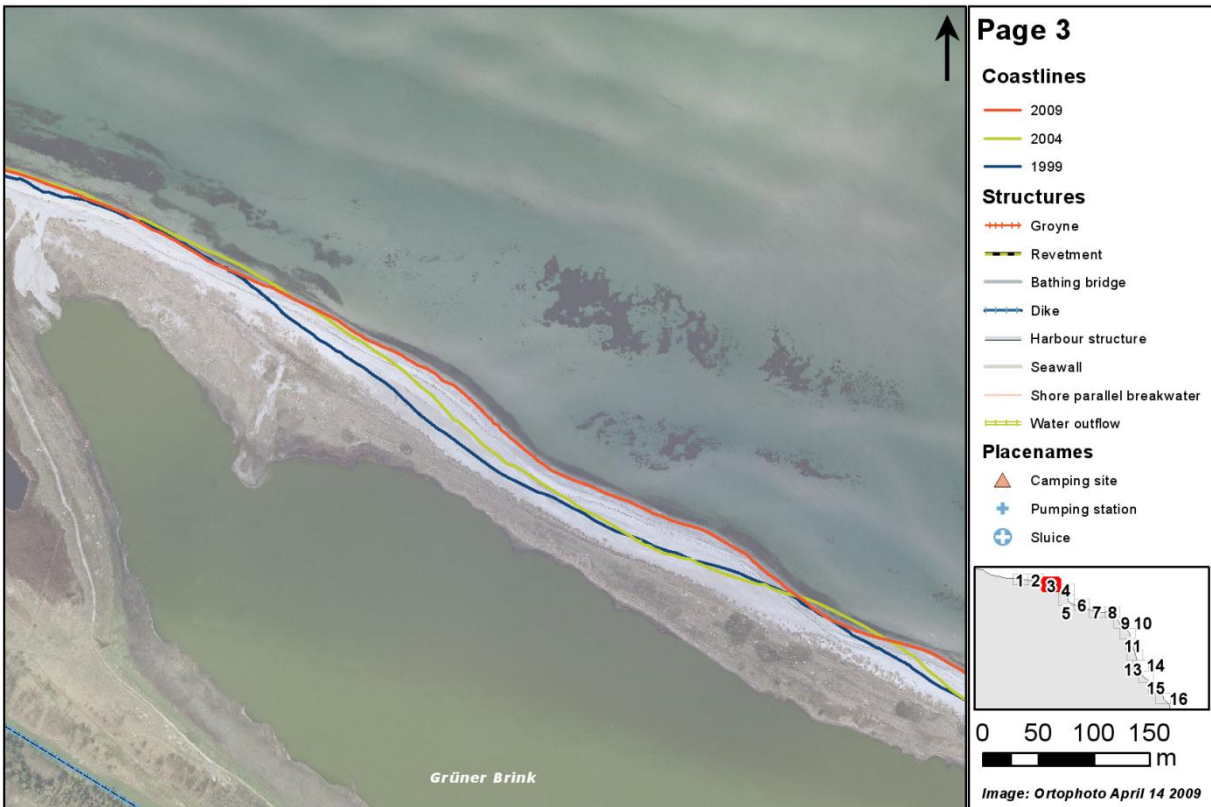


## ***A P P E N D I X E***

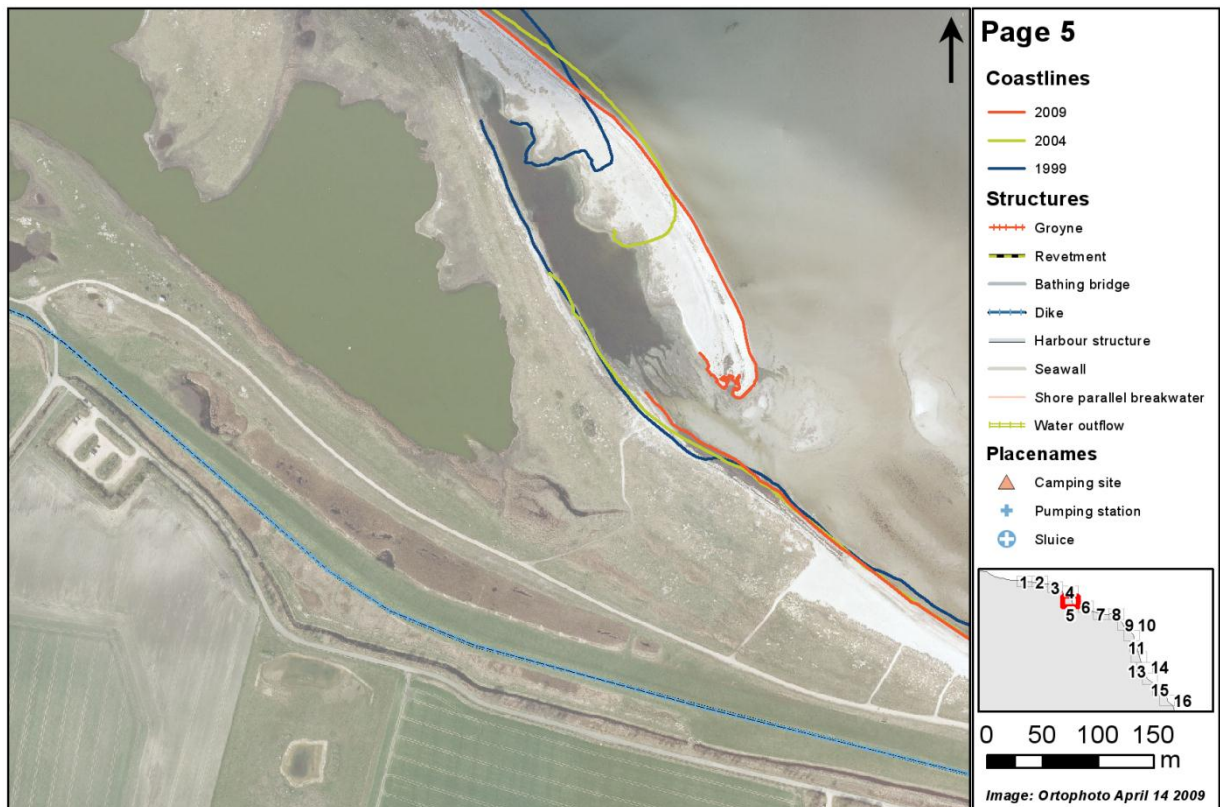
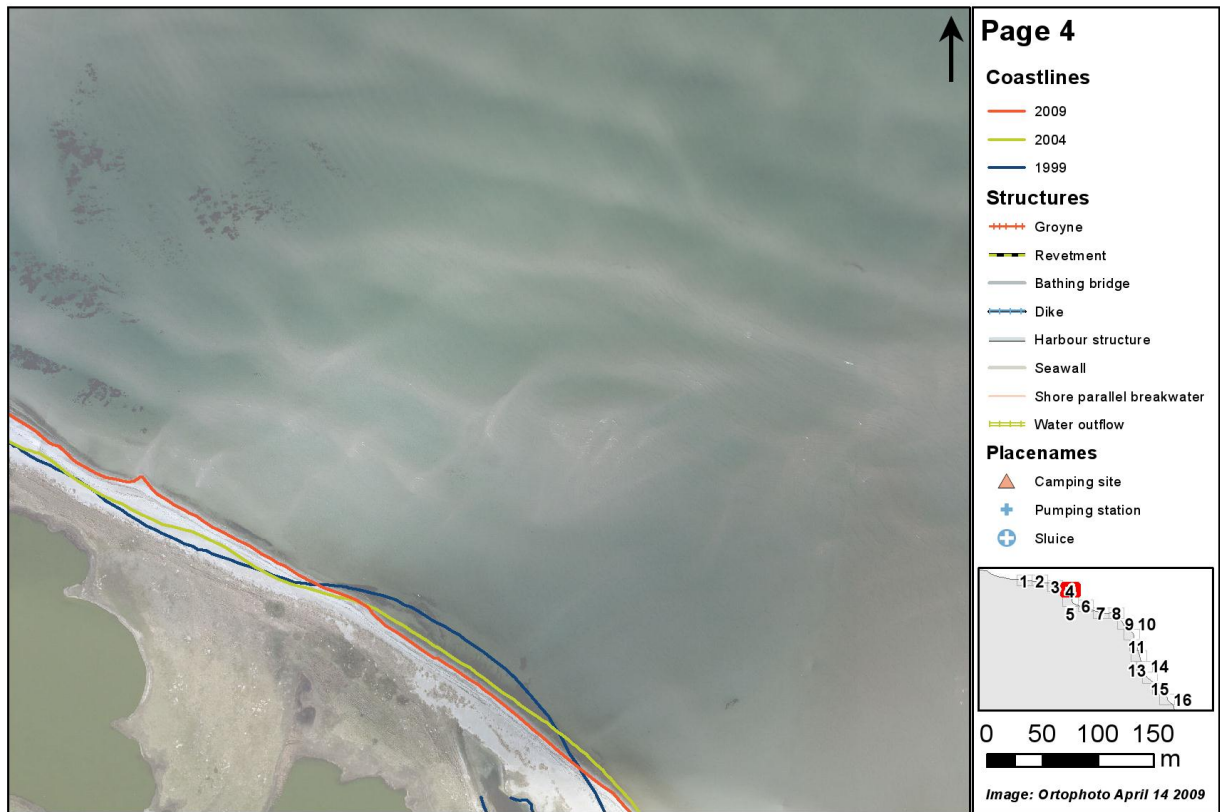
### ***Aerial Photos, North Coast of Fehmarn***



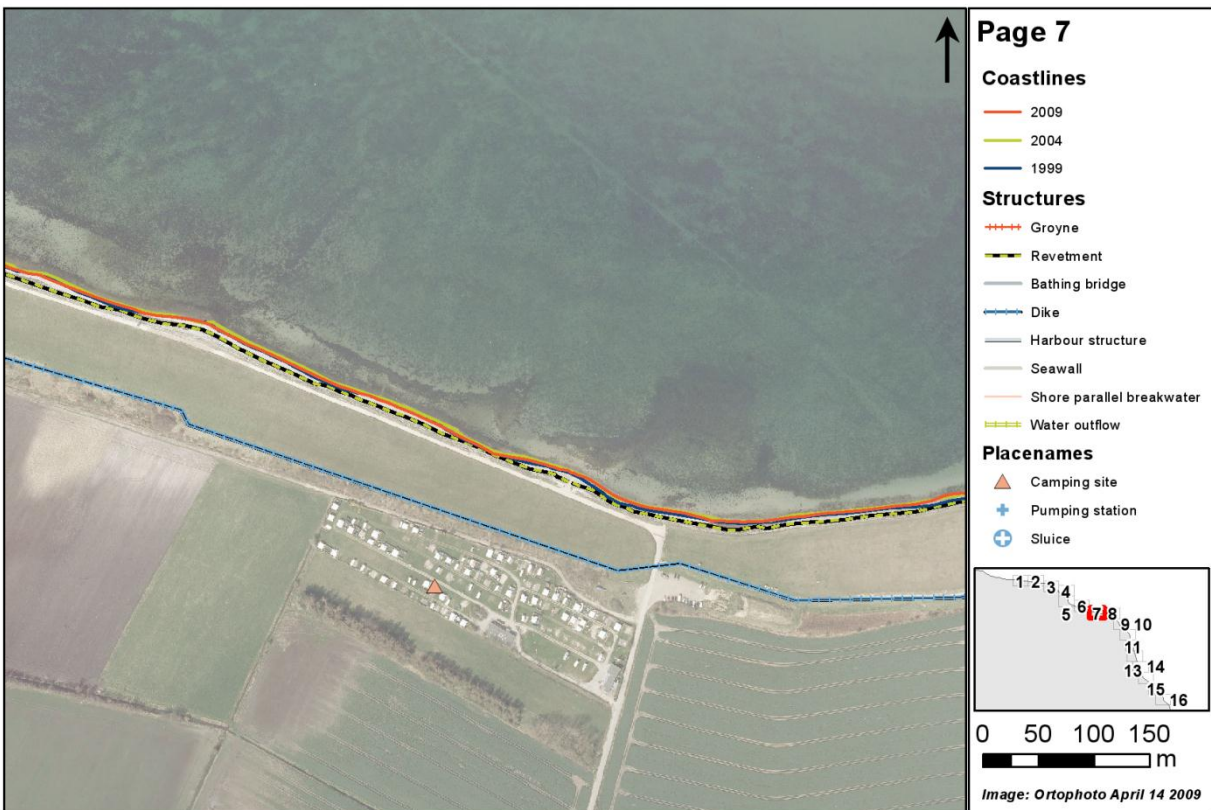


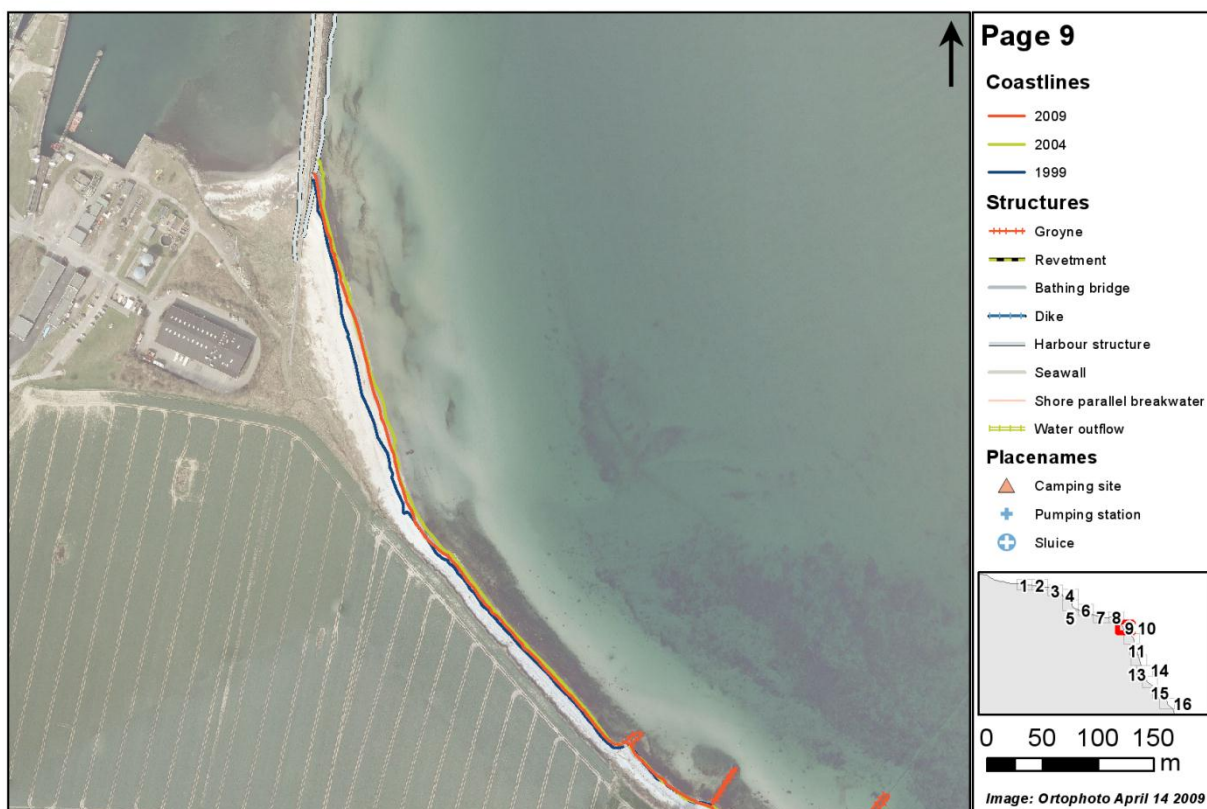
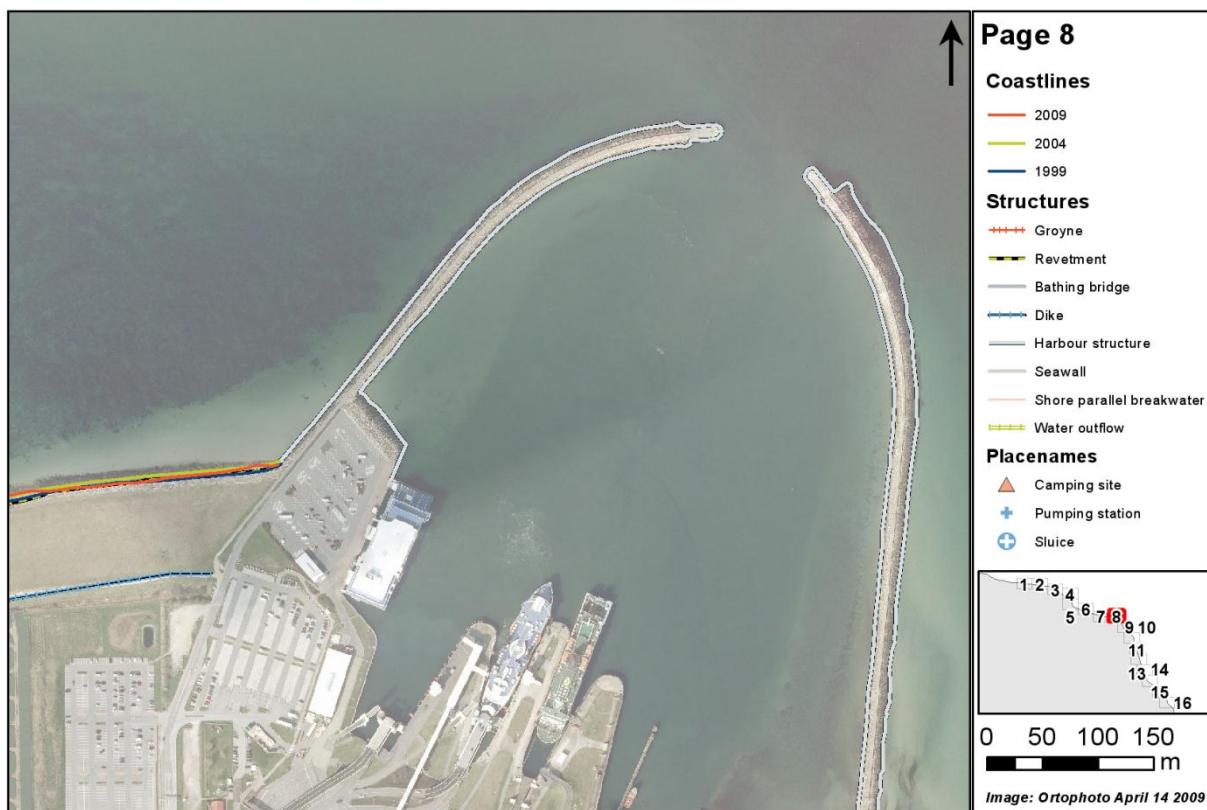




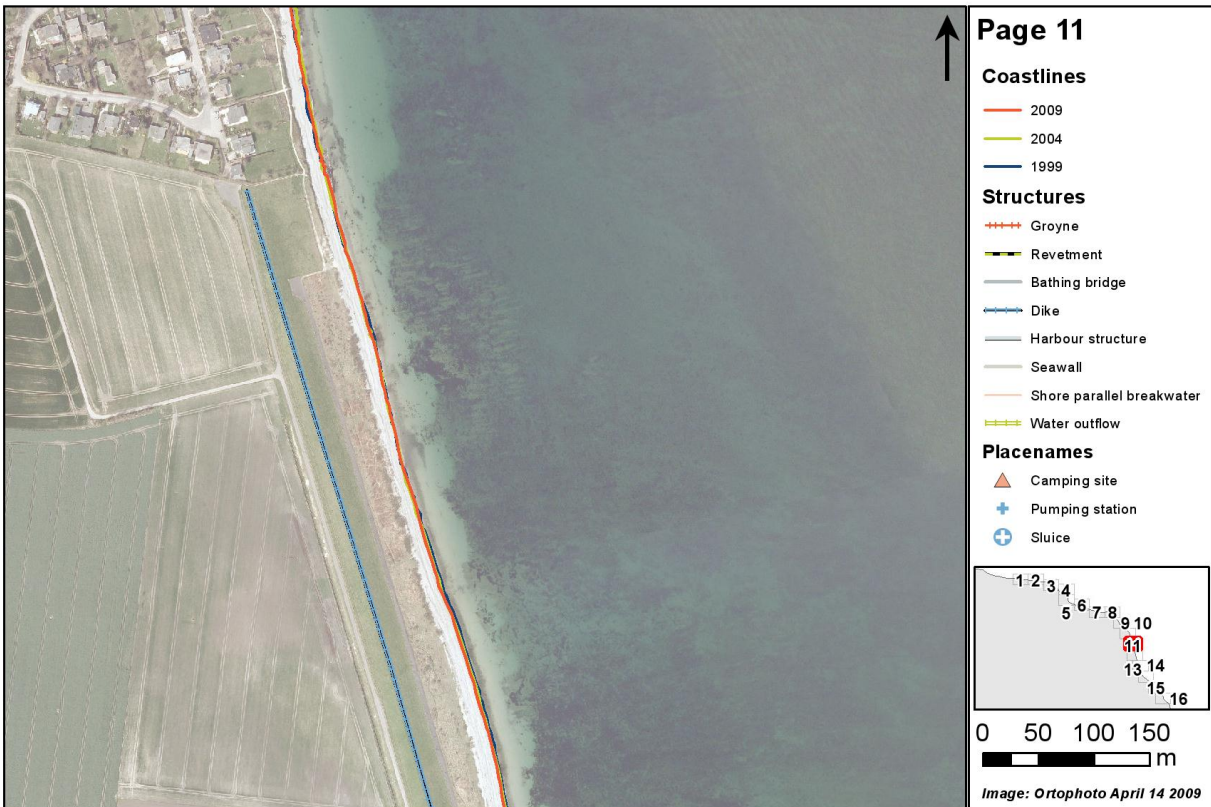
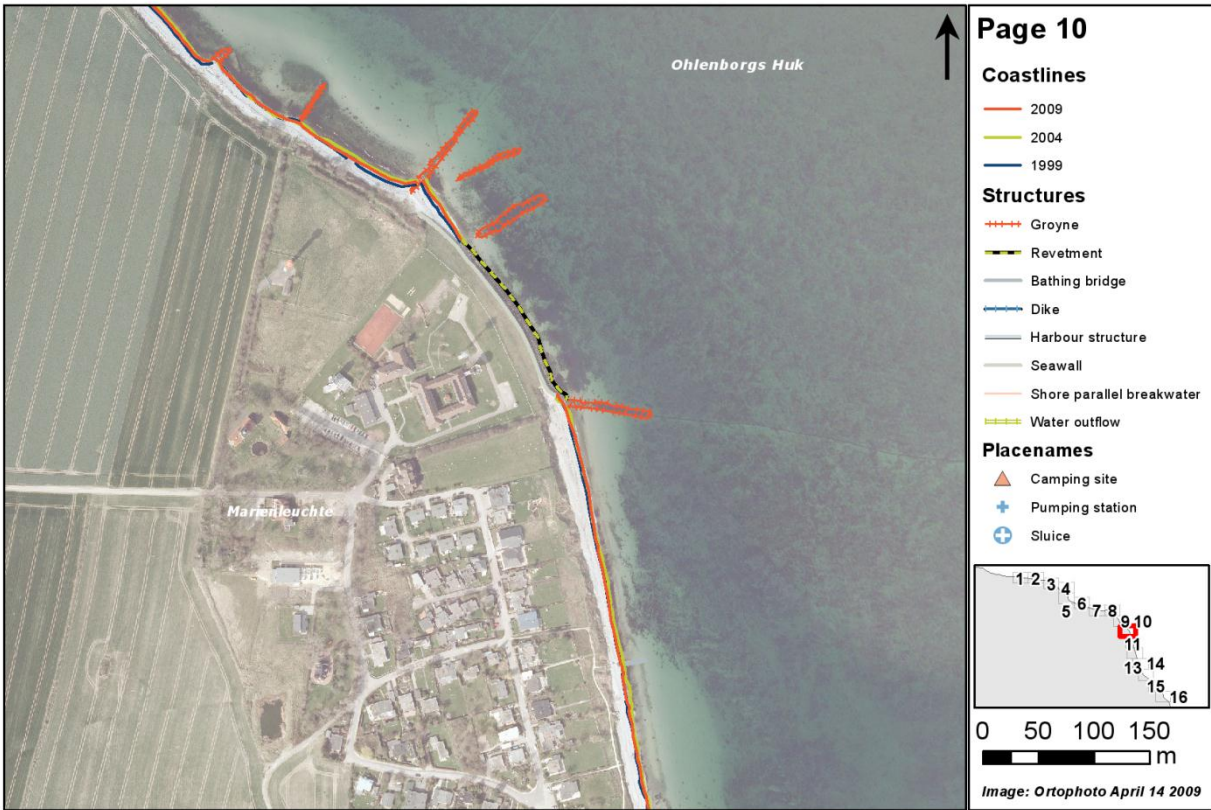




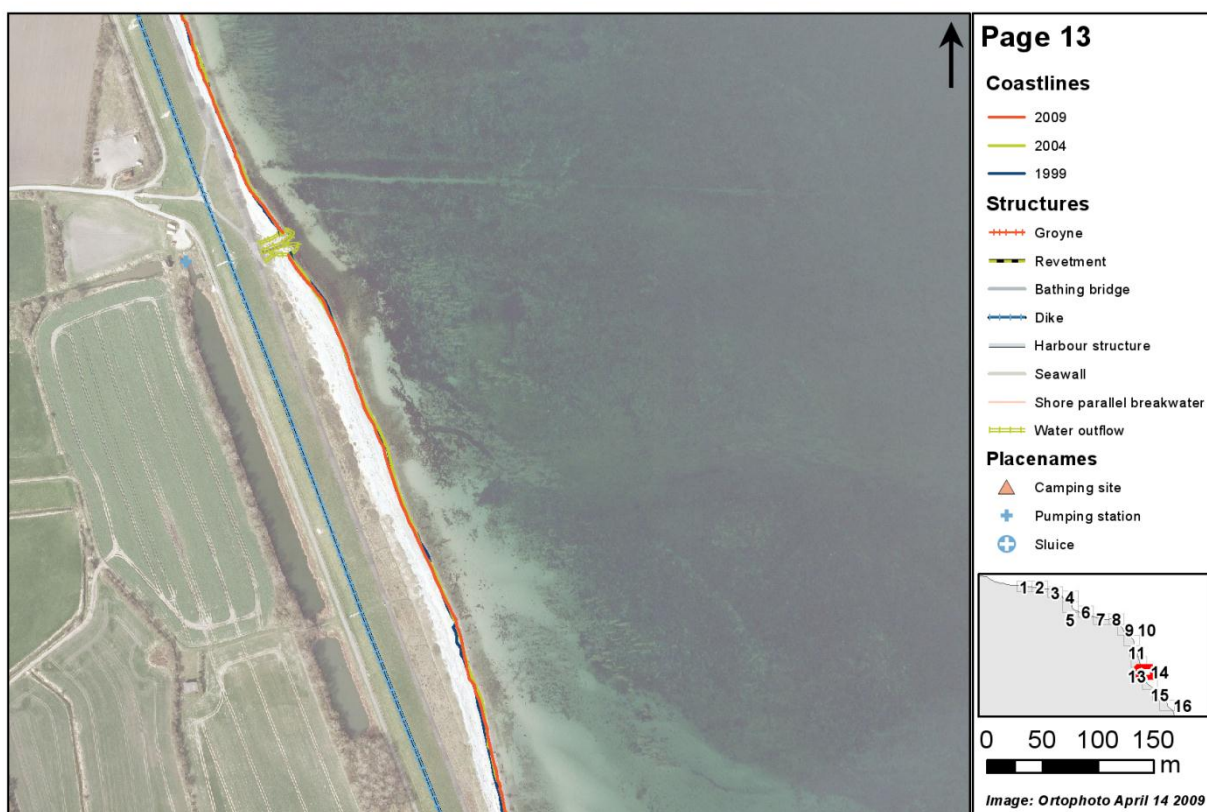
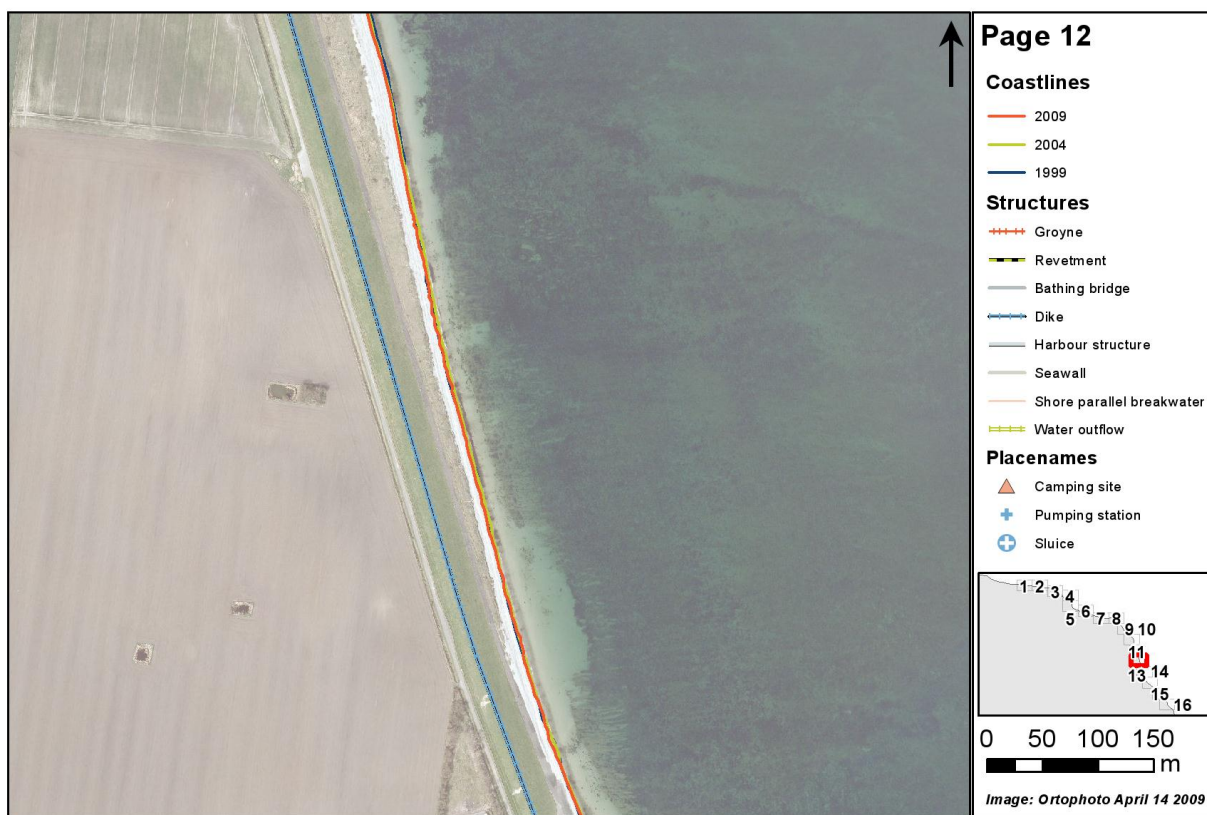


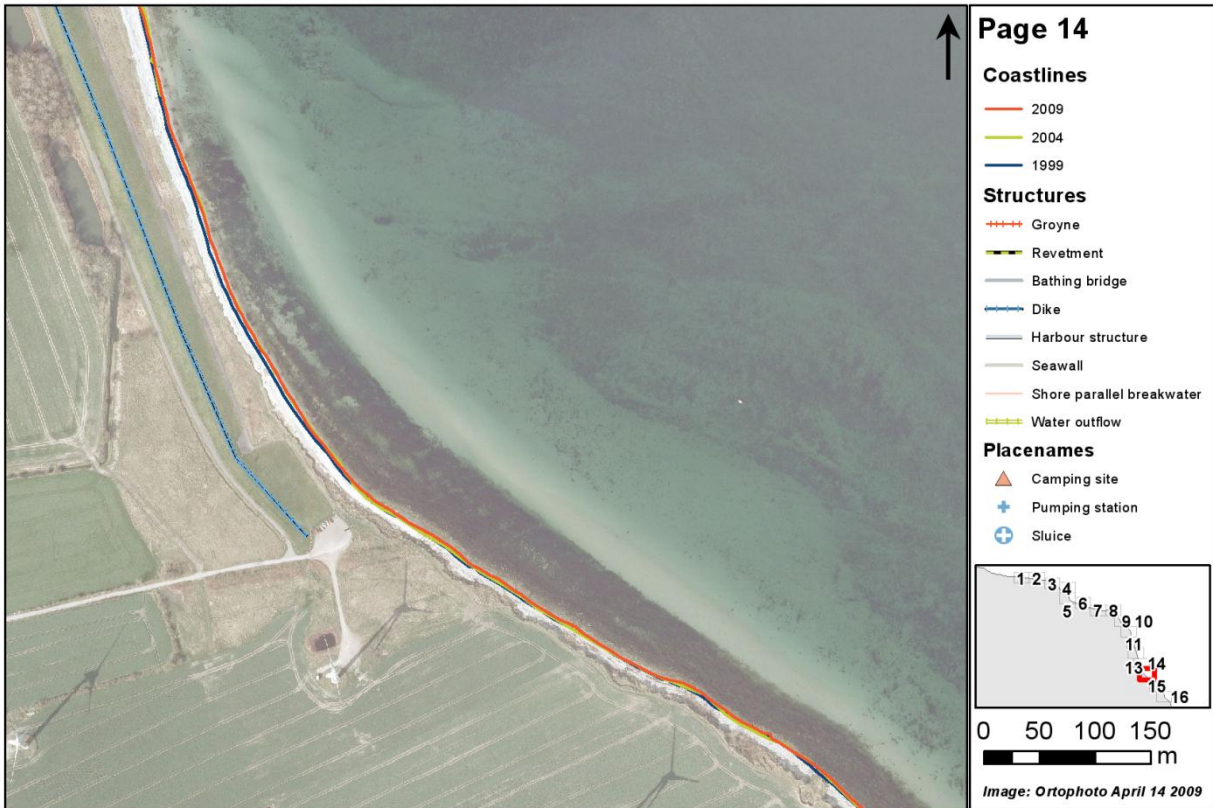




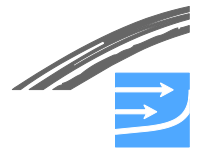




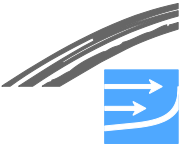






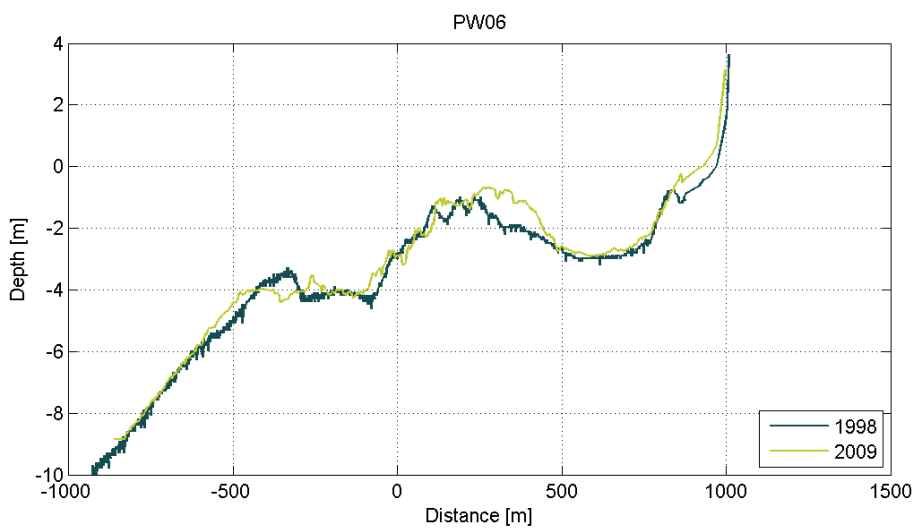
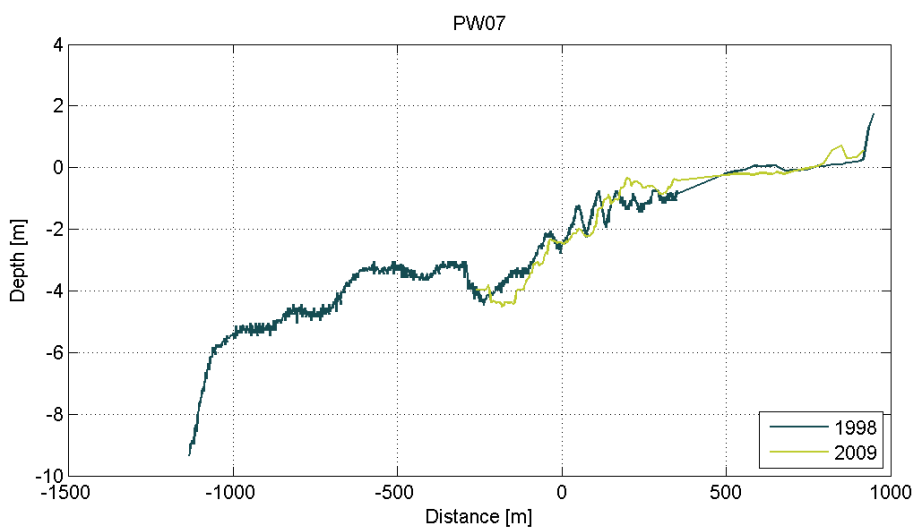
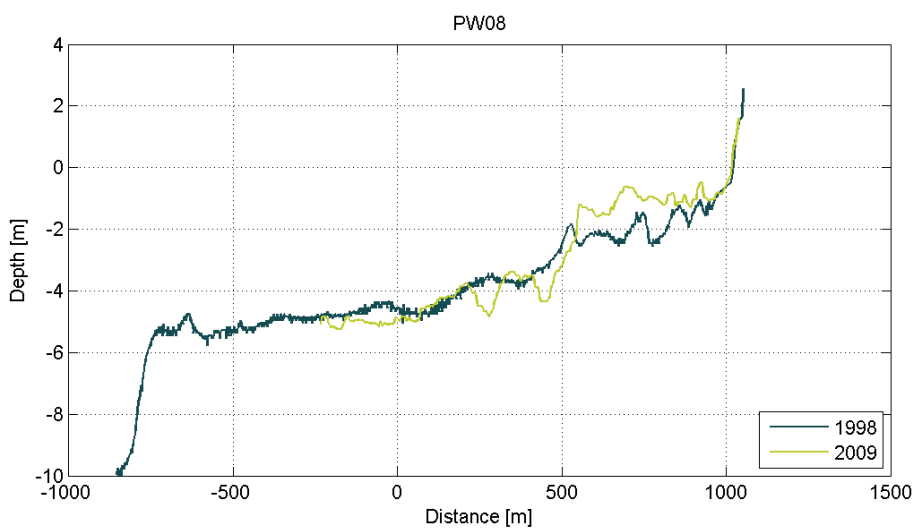


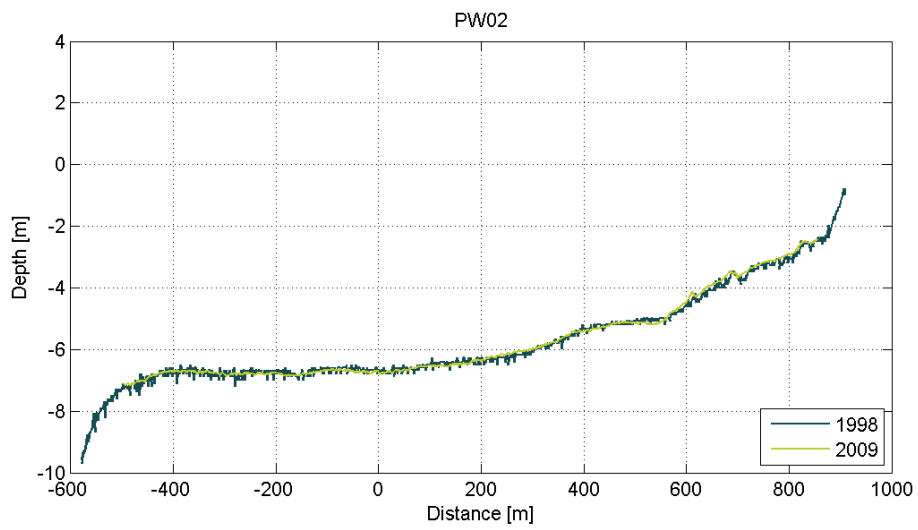
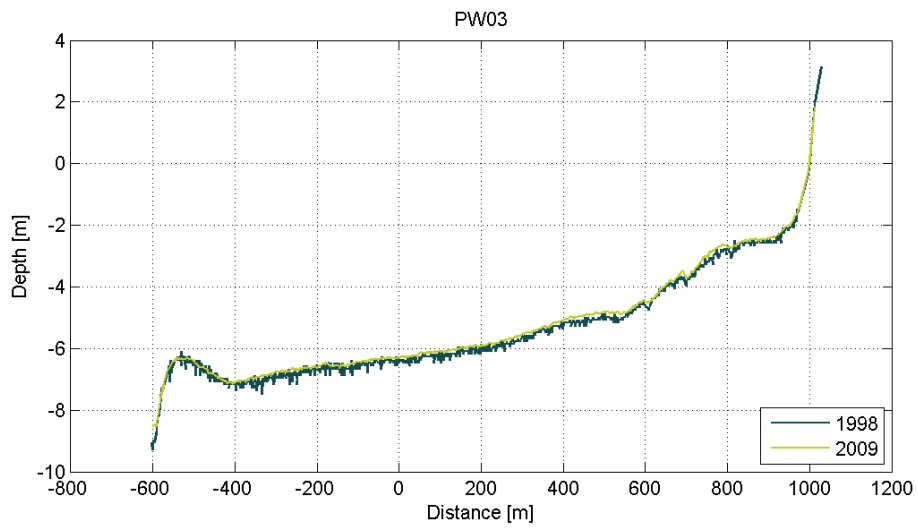
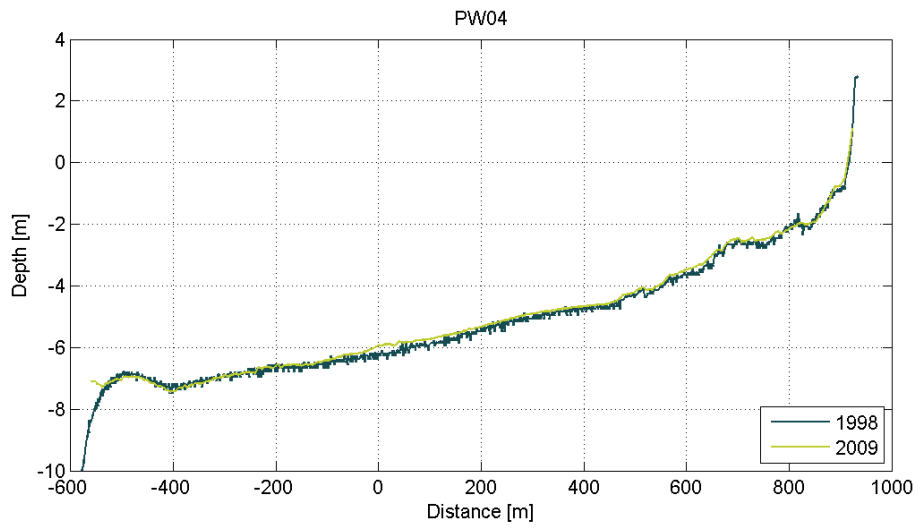




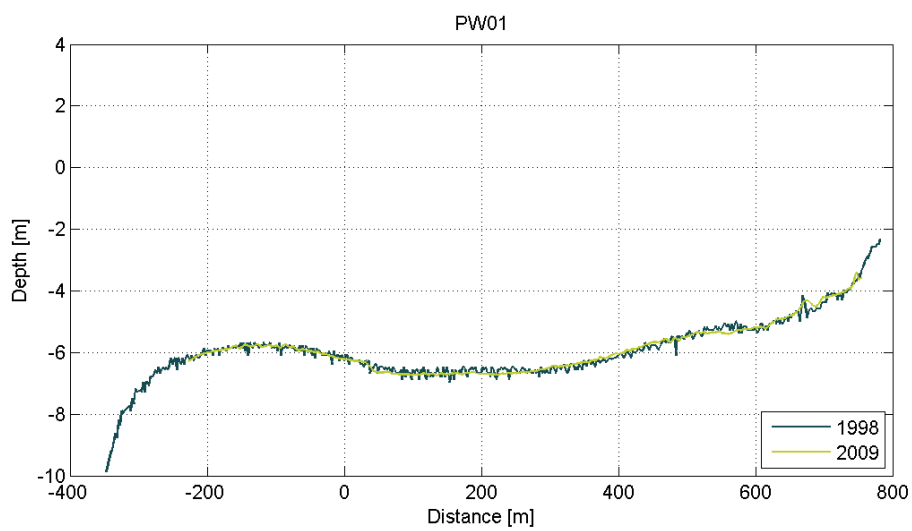
## ***A P P E N D I X F***

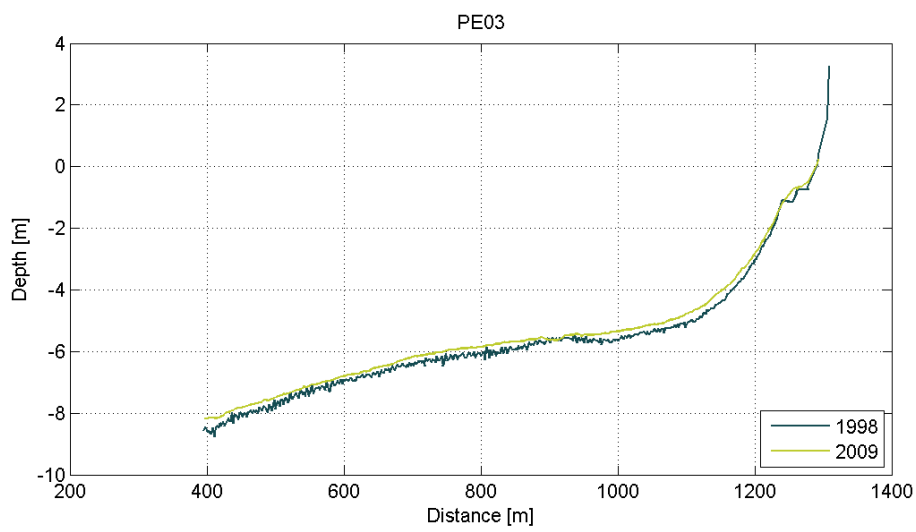
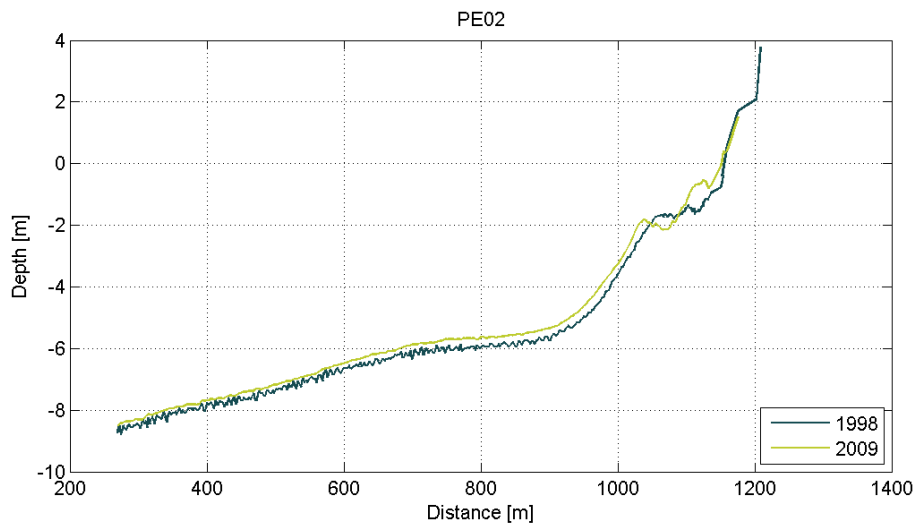
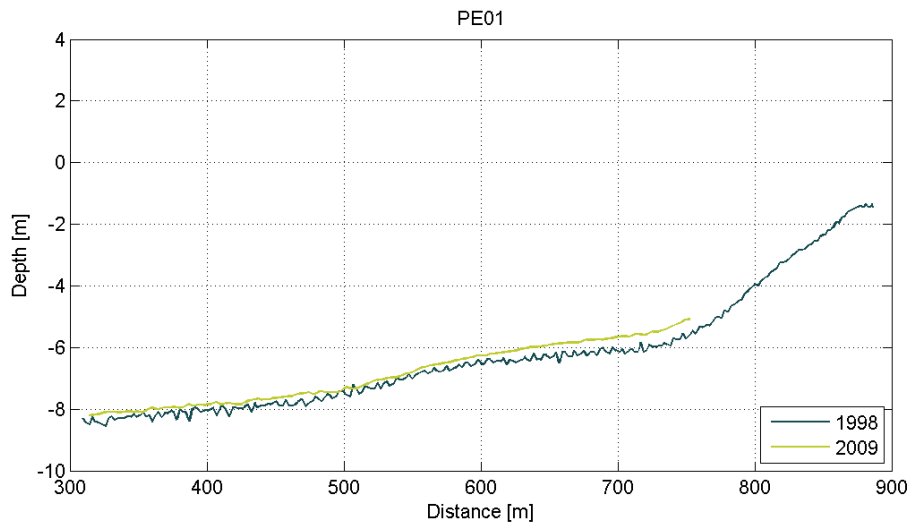
### ***Coastal profiles, North Coast of Fehmarn***

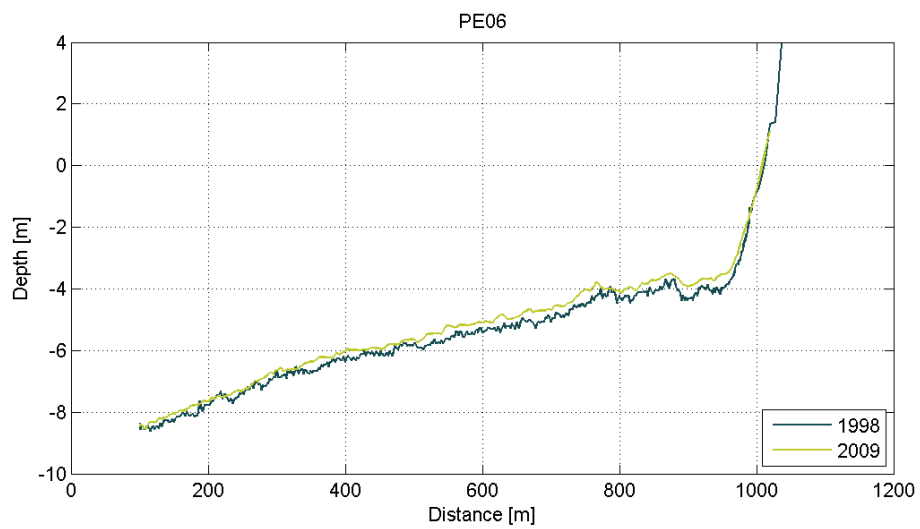
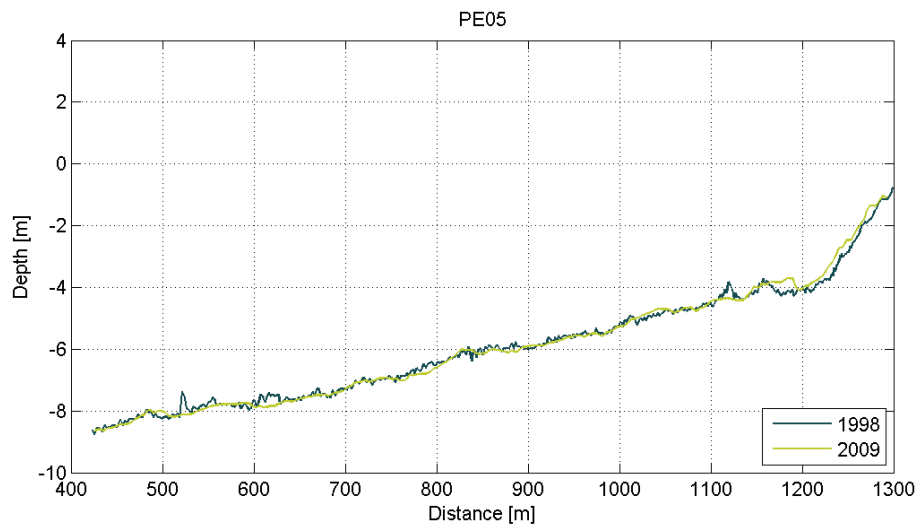
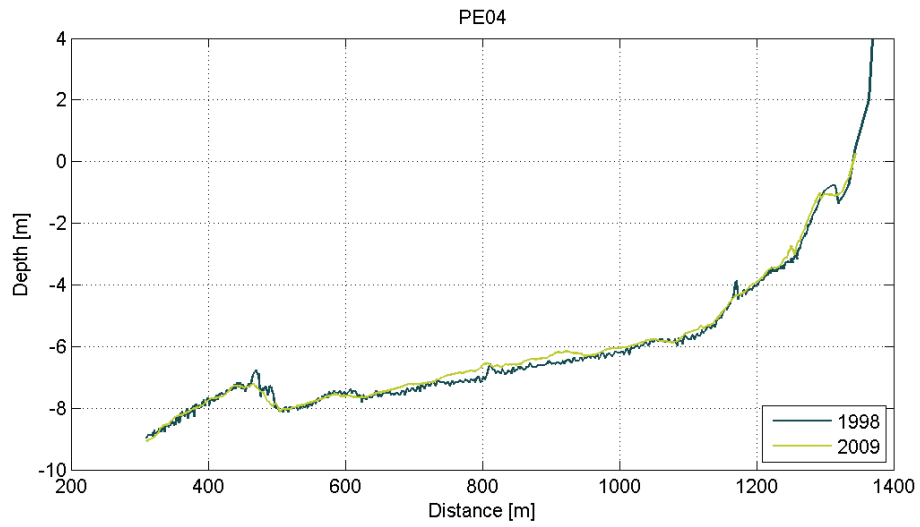
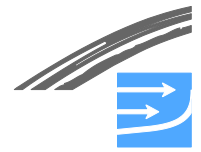




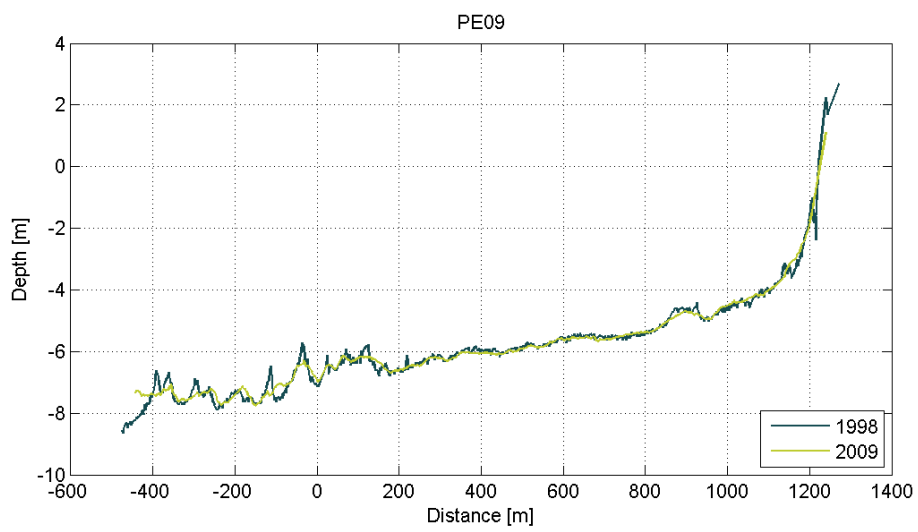
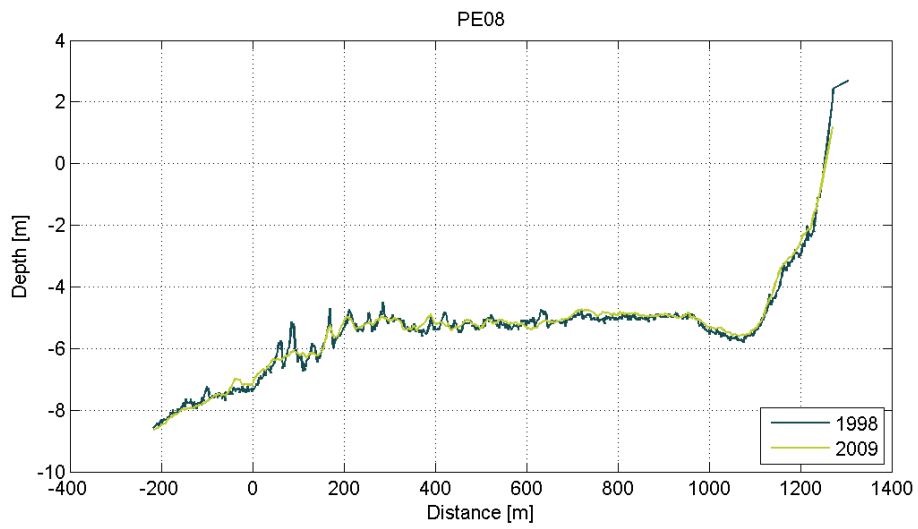
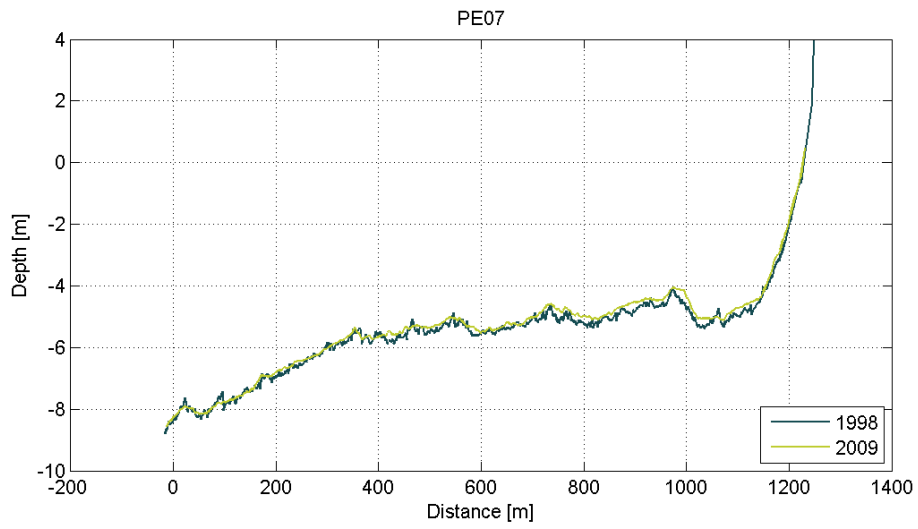


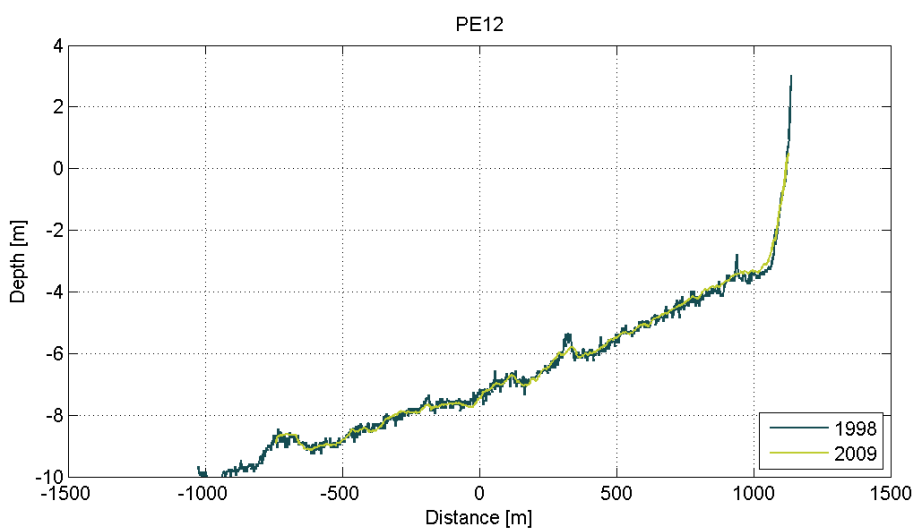
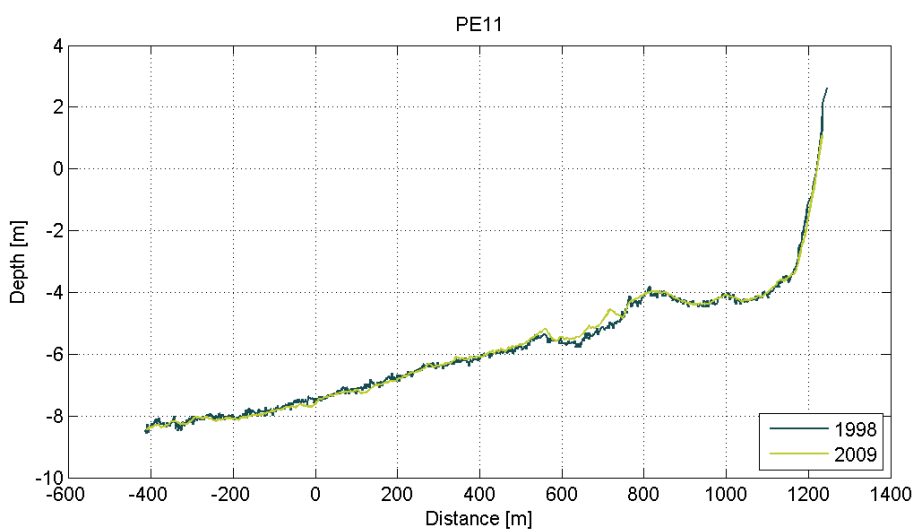
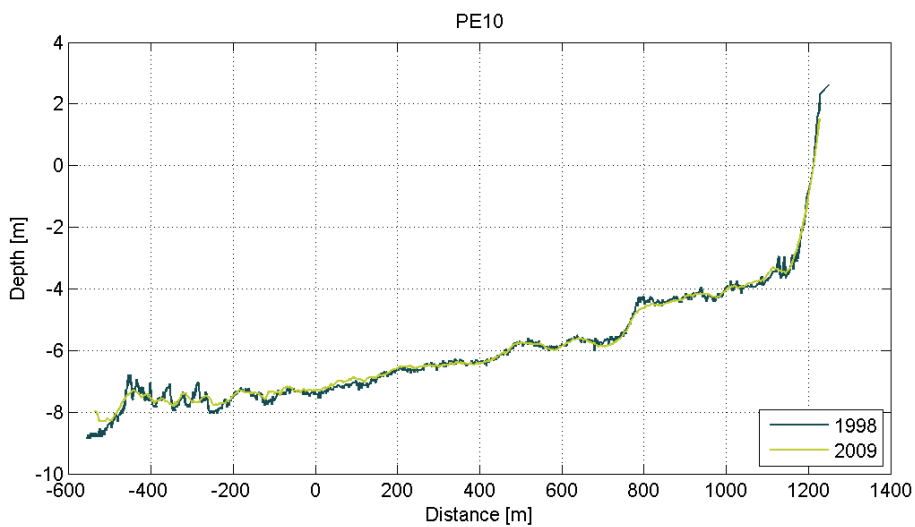


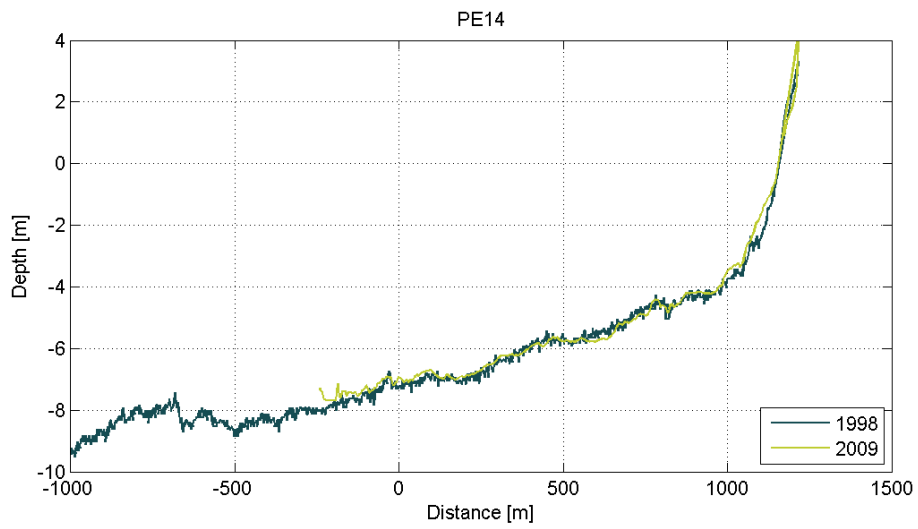
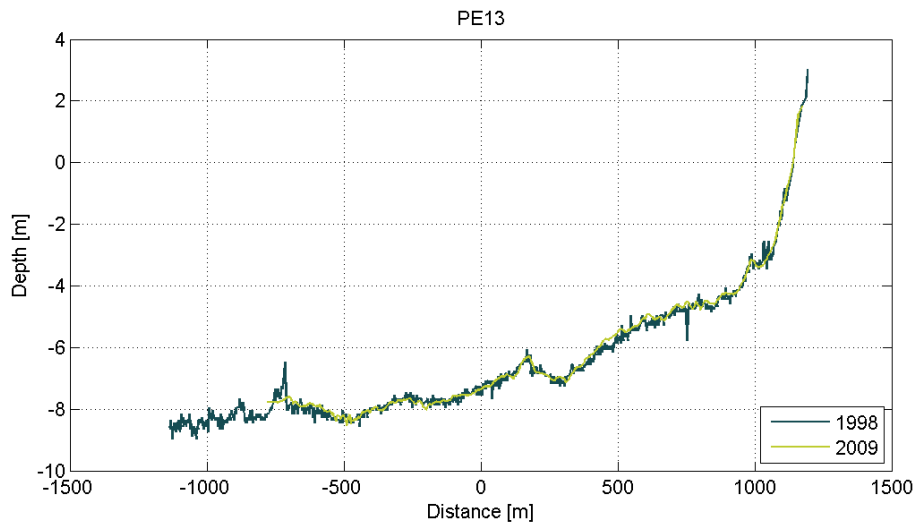




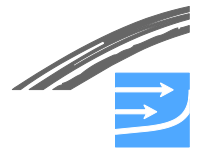






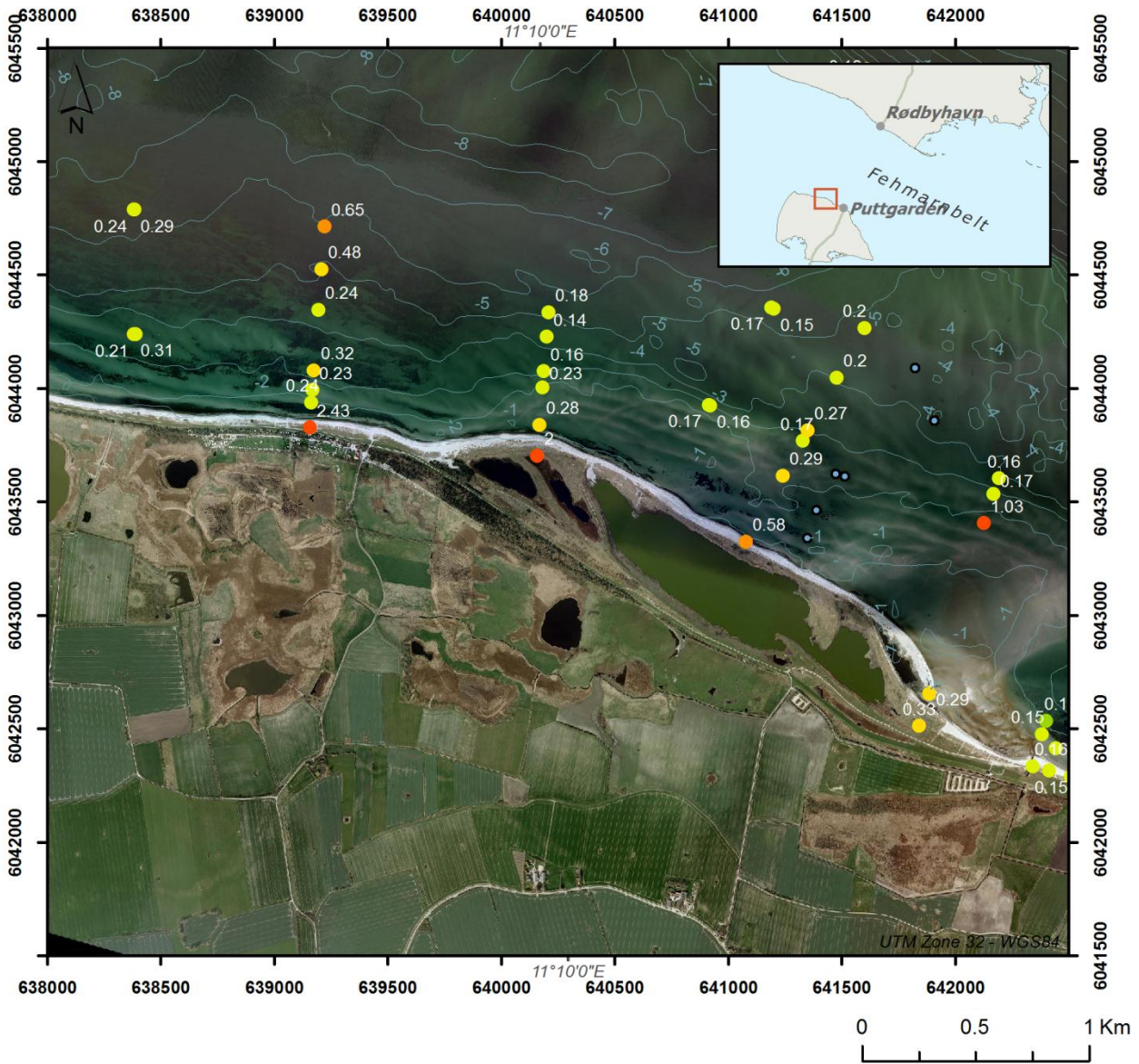






## ***A P P E N D I X G***

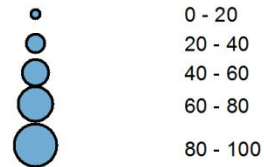
### ***Sea Bed Conditions, North Coast of Fehmarn***



### Seabed samples 1998 d50 (mm)



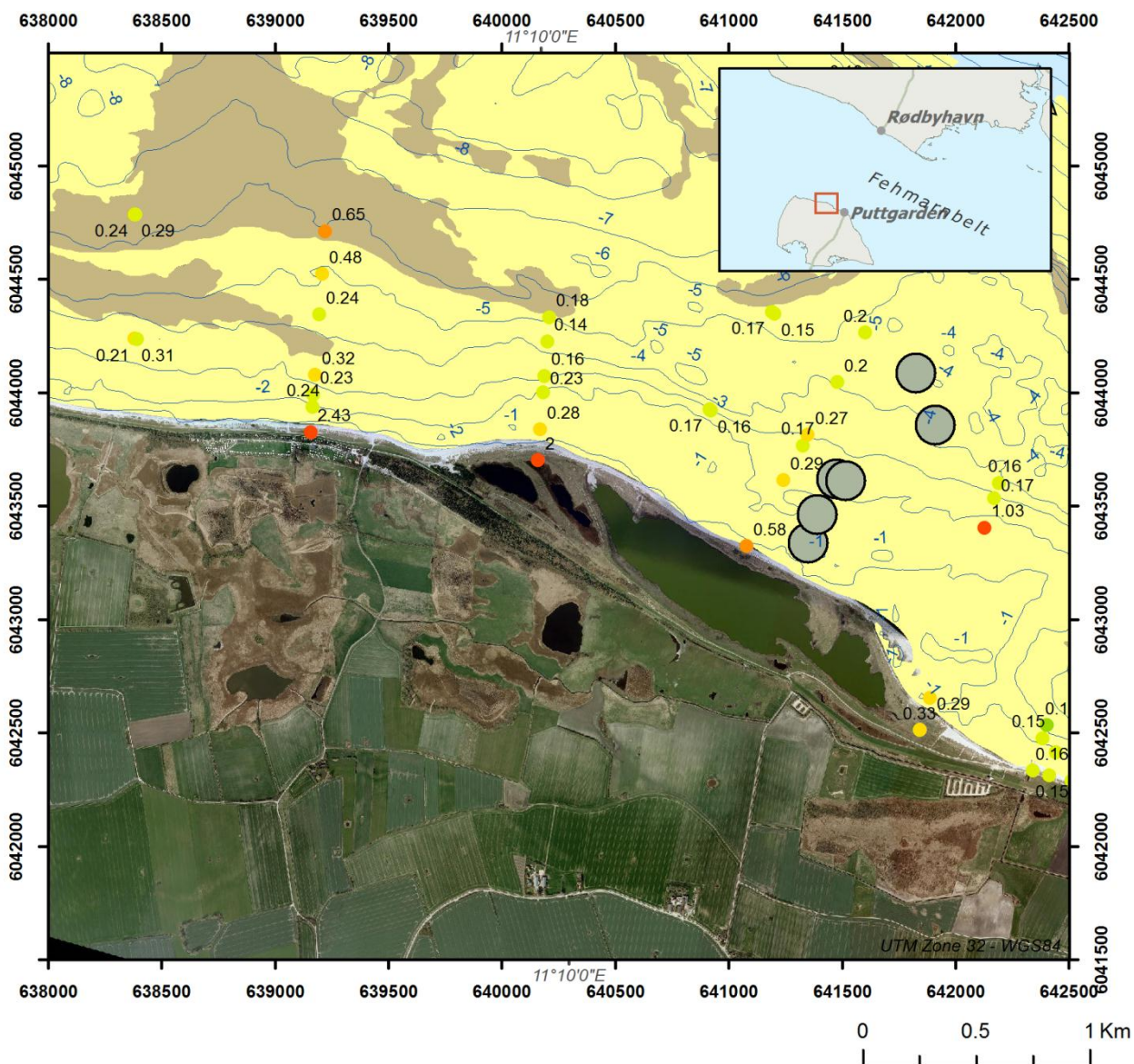
### Suitable substrate for macroalgae cover(%)



### Seabed samples 2009 d50 (mm)







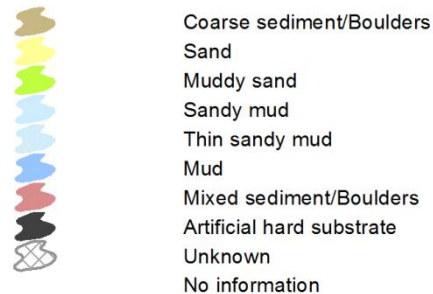
### Seabed samples 1998 d50 (mm)



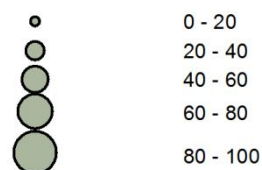
### Seabed samples 2009 d50 (mm)



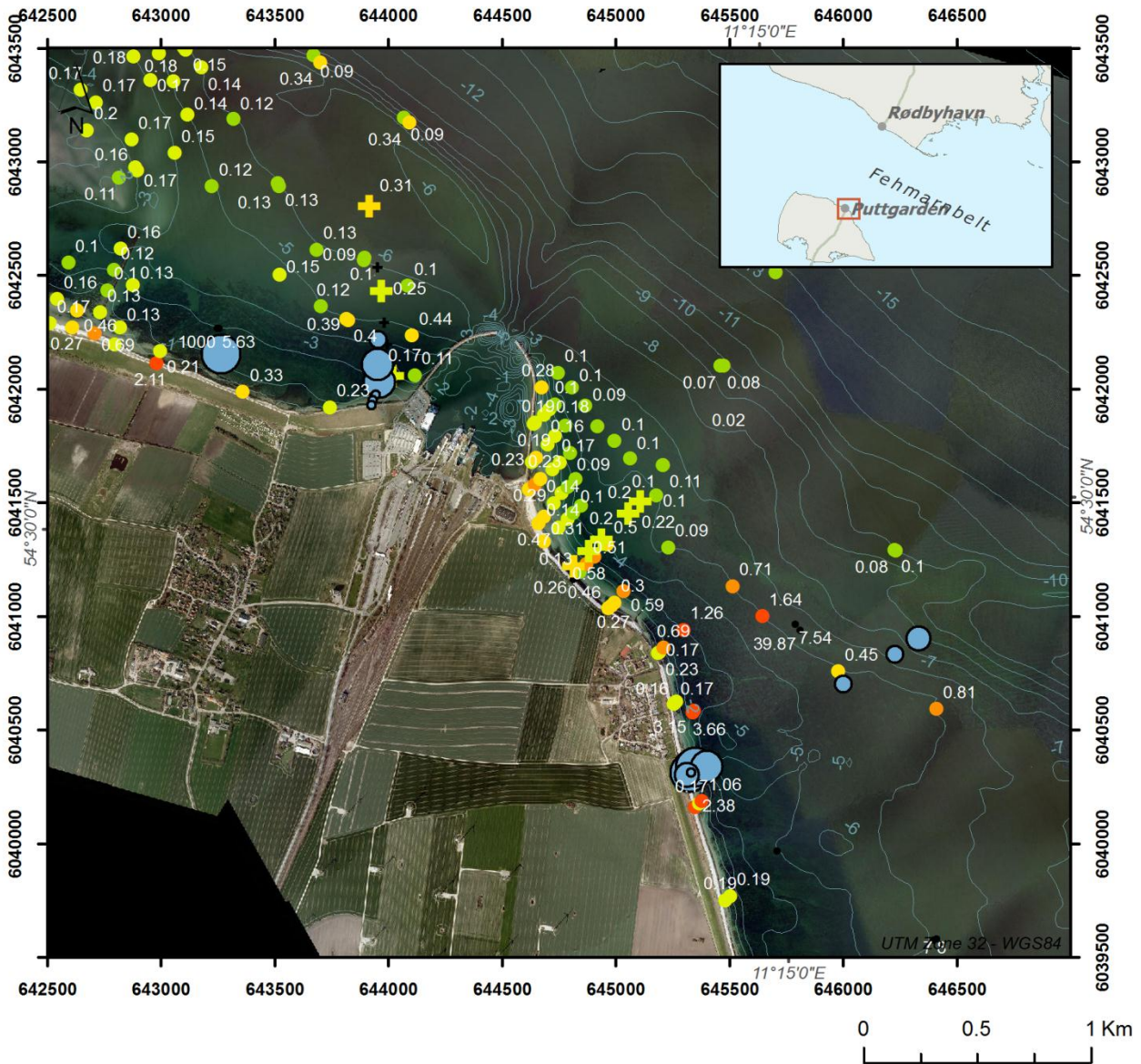
### Substrate



### Sand cover (%)



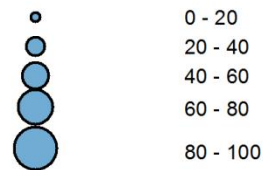




### Seabed samples 1998 d50 (mm)



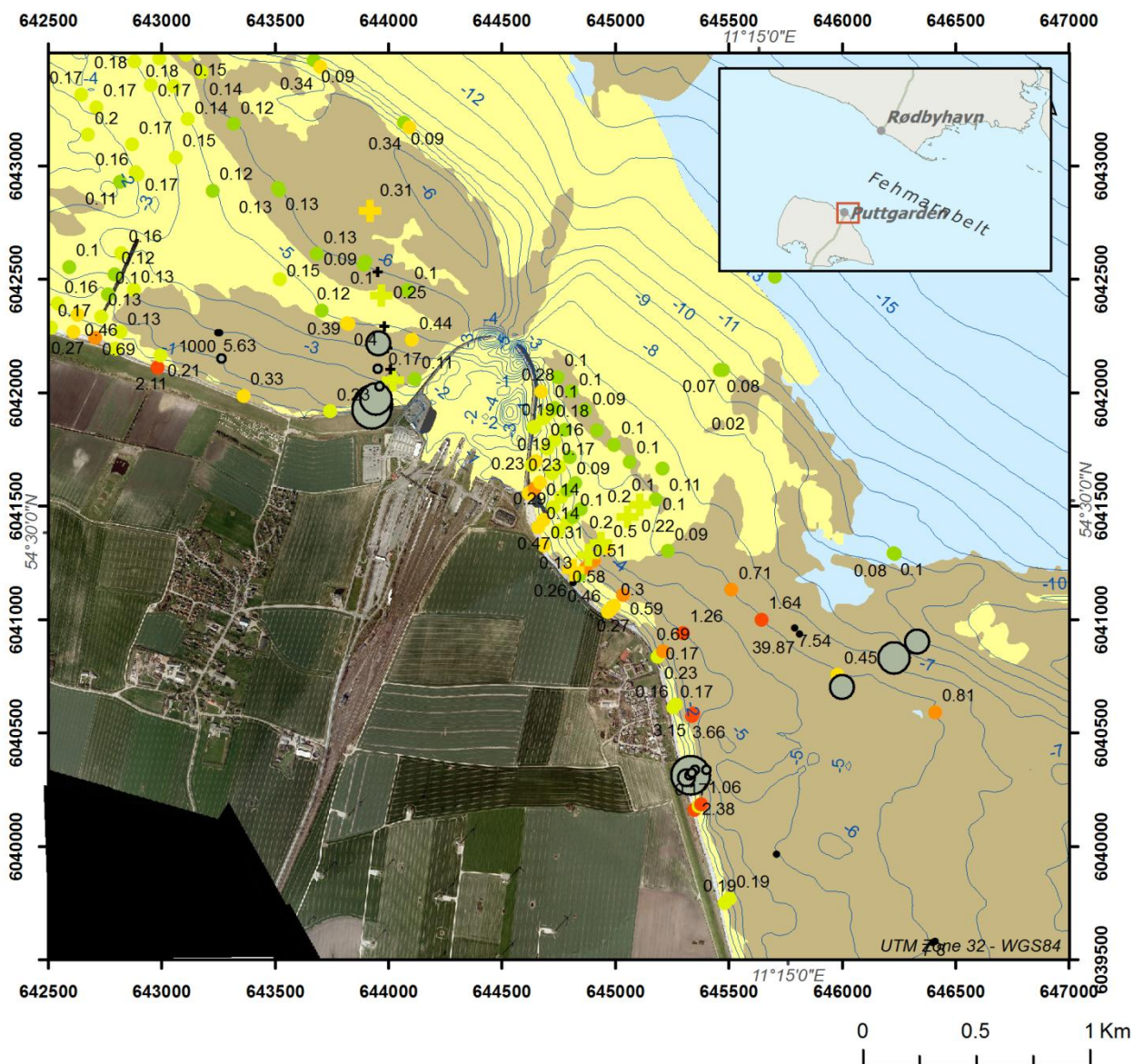
### Suitable substrate for macroalgae cover(%)



### Seabed samples 2009 d50 (mm)







### Seabed samples 1998 d50 (mm)

+	0.0 - 0.03 (Medium Silt and smaller)
+	0.04 - 0.06 (Coarse Silt)
+	0.07 - 0.13 (Very Fine Sand)
+	0.14 - 0.25 (Fine Sand)
+	0.26 - 0.50 (Medium Sand)
+	0.51 - 1.00 (Coarse Sand)
+	1.01 - 4.00 (Very Coarse Sand and larger)
+	d50 N/A

### Seabed samples 2009 d50 (mm)

●	0.0 - 0.03 (Medium Silt and smaller)
●	0.04 - 0.06 (Coarse Silt)
●	0.07 - 0.13 (Very Fine Sand)
●	0.14 - 0.25 (Fine Sand)
●	0.26 - 0.50 (Medium Sand)
●	0.51 - 1.00 (Coarse Sand)
●	1.01 - 4.00 (Very Coarse Sand and larger)
●	d50 N/A

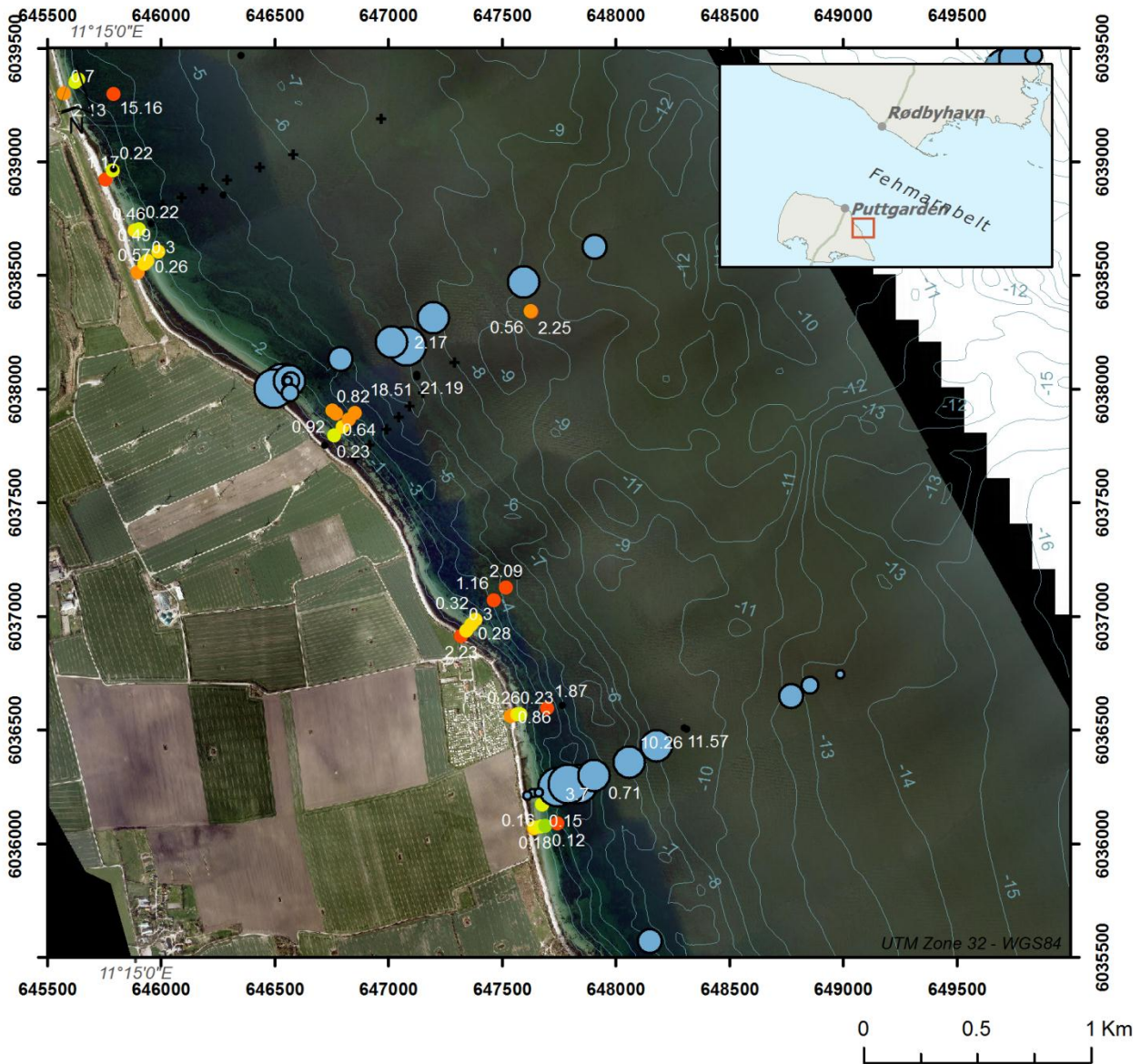
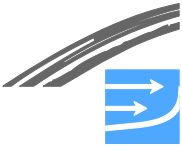
### Substrate

	Coarse sediment/Boulders
	Sand
	Muddy sand
	Sandy mud
	Thin sandy mud
	Mud
	Mixed sediment/Boulders
	Artificial hard substrate
	Unknown
	No information

### Sand cover (%)

	0 - 20
	20 - 40
	40 - 60
	60 - 80
	80 - 100

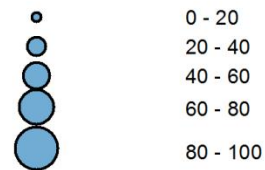




### Seabed samples 1998 d50 (mm)



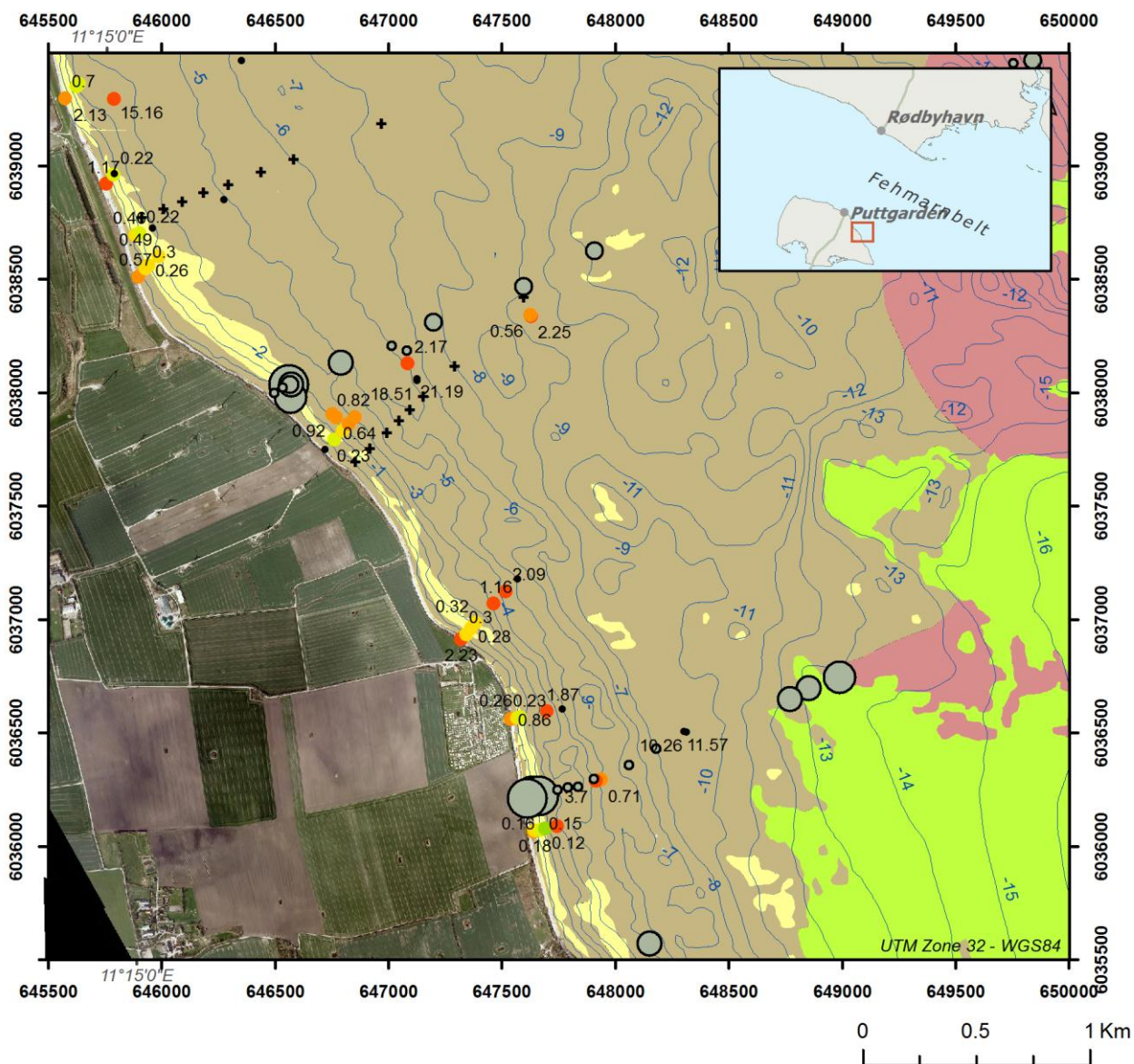
### Suitable substrate for macroalgae cover(%)



### Seabed samples 2009 d50 (mm)







**Seabed samples 1998 d50 (mm)**

- + 0.0 - 0.03 (Medium Silt and smaller)
- + 0.04 - 0.06 (Coarse Silt)
- + 0.07 - 0.13 (Very Fine Sand)
- + 0.14 - 0.25 (Fine Sand)
- + 0.26 - 0.50 (Medium Sand)
- + 0.51 - 1.00 (Coarse Sand)
- + 1.01 - 4.00 (Very Coarse Sand and larger)
- + d50 N/A

**Seabed samples 2009 d50 (mm)**

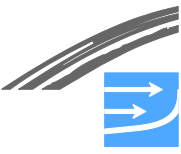
- 0.0 - 0.03 (Medium Silt and smaller)
- 0.04 - 0.06 (Coarse Silt)
- 0.07 - 0.13 (Very Fine Sand)
- 0.14 - 0.25 (Fine Sand)
- 0.26 - 0.50 (Medium Sand)
- 0.51 - 1.00 (Coarse Sand)
- 1.01 - 4.00 (Very Coarse Sand and larger)
- d50 N/A

**Substrate**

- Coarse sediment/Boulders
- Sand
- Muddy sand
- Sandy mud
- Thin sandy mud
- Mud
- Mixed sediment/Boulders
- Artificial hard substrate
- Unknown
- No information

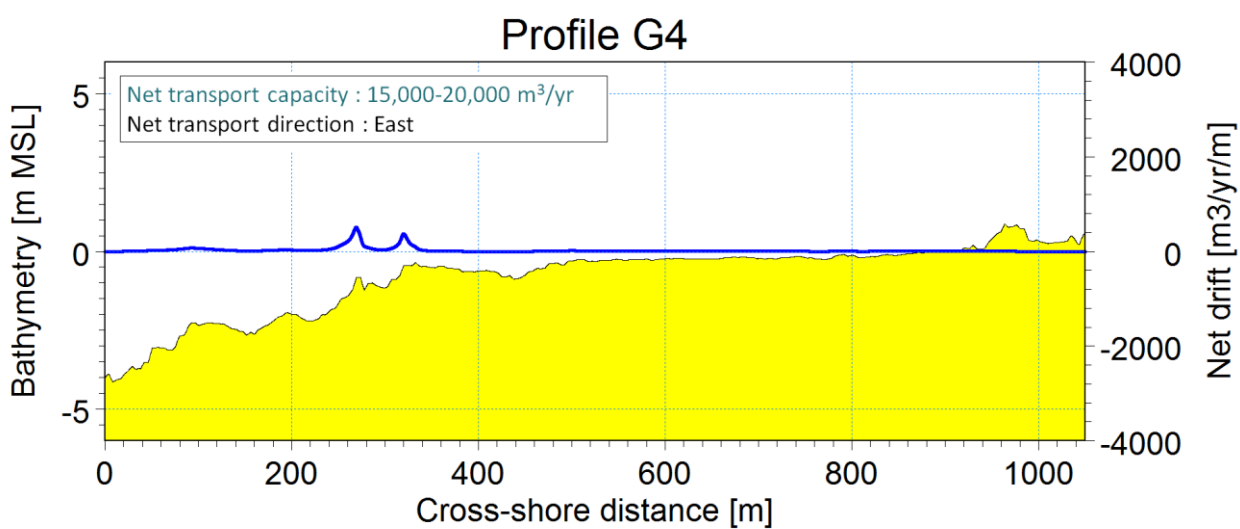
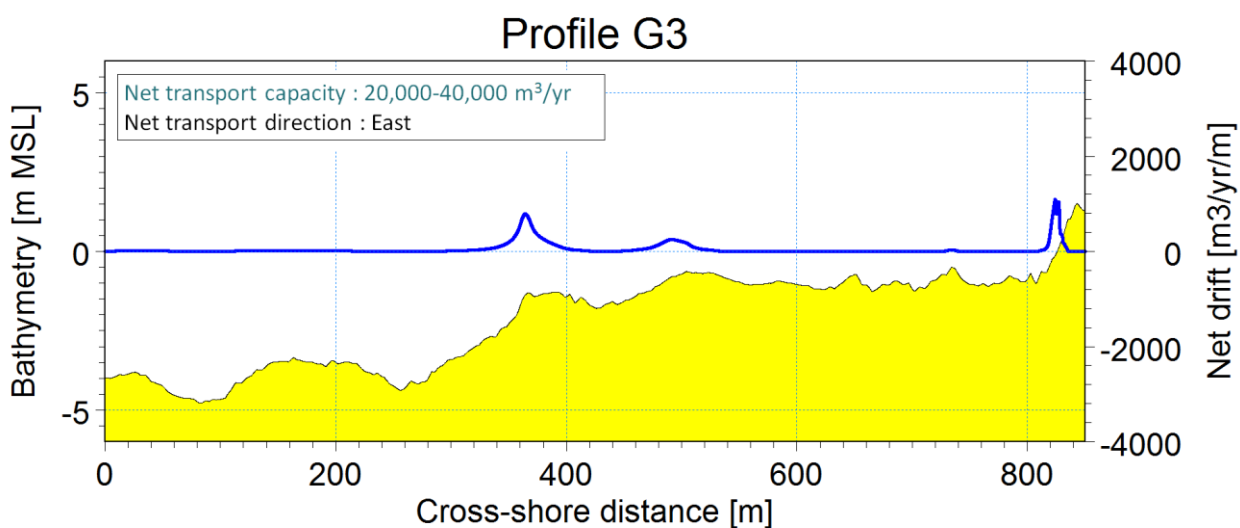
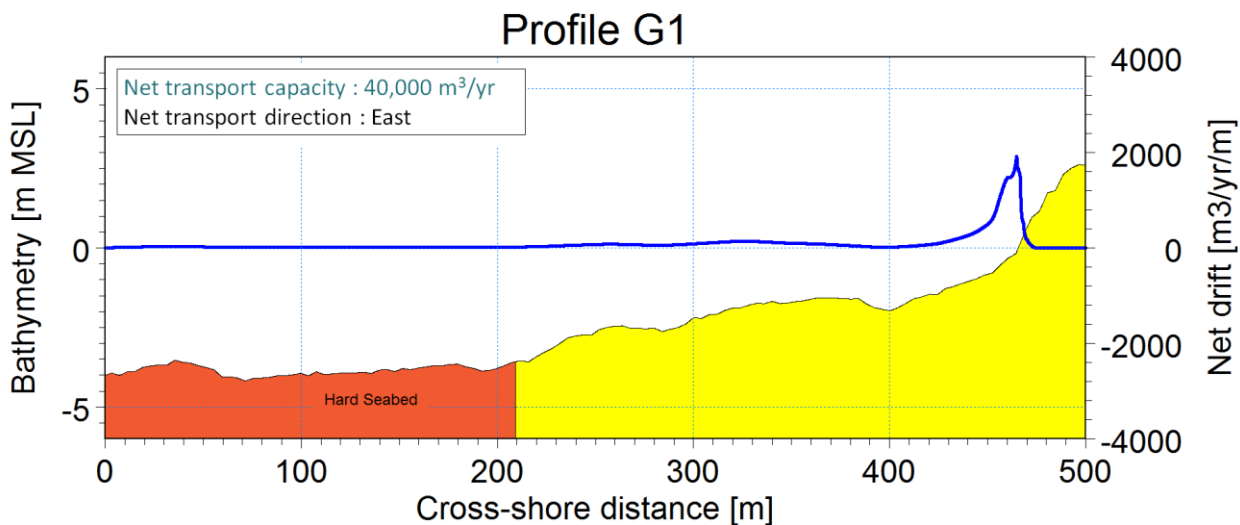
**Sand cover (%)**

- 0 - 20
- 20 - 40
- 40 - 60
- 60 - 80
- 80 - 100

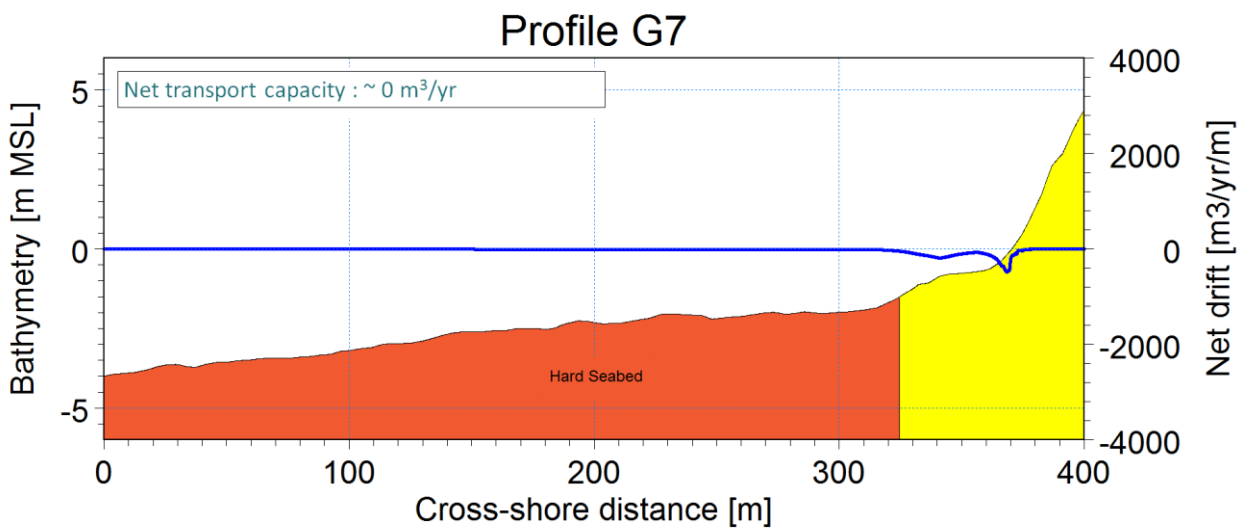
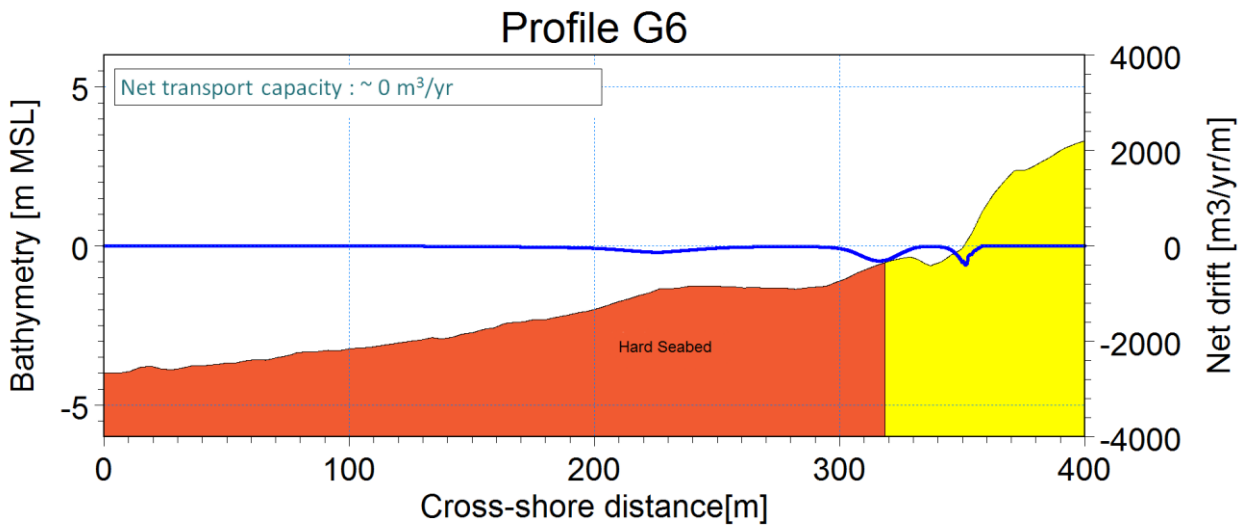
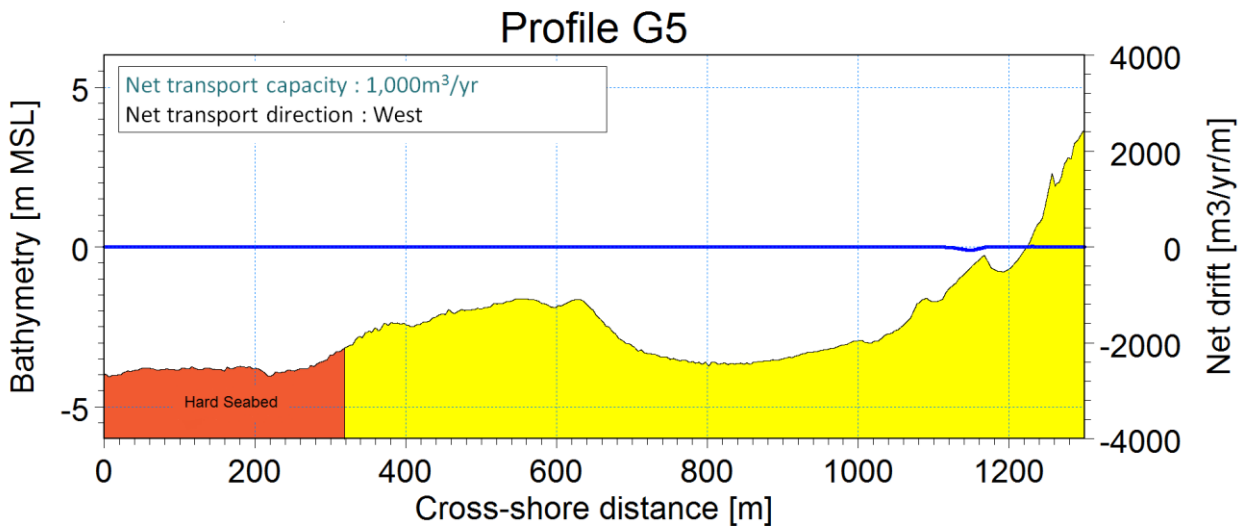


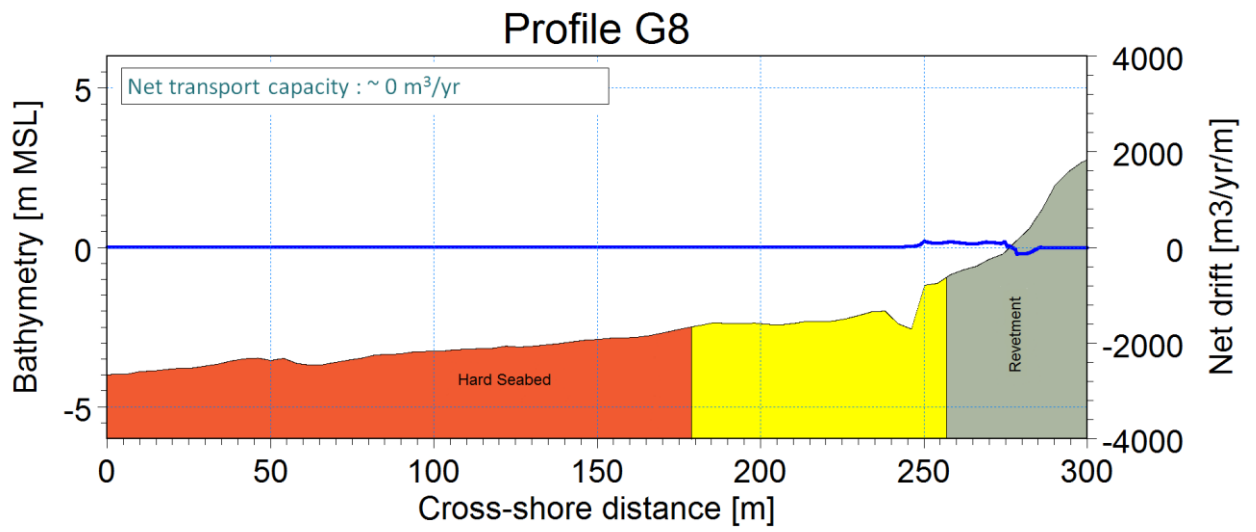
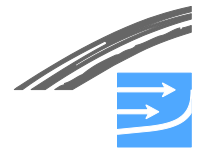
## **A P P E N D I X H**

### ***Distribution of Net Annual Transport in the Coastal profile, North Coast of Fehmarn***



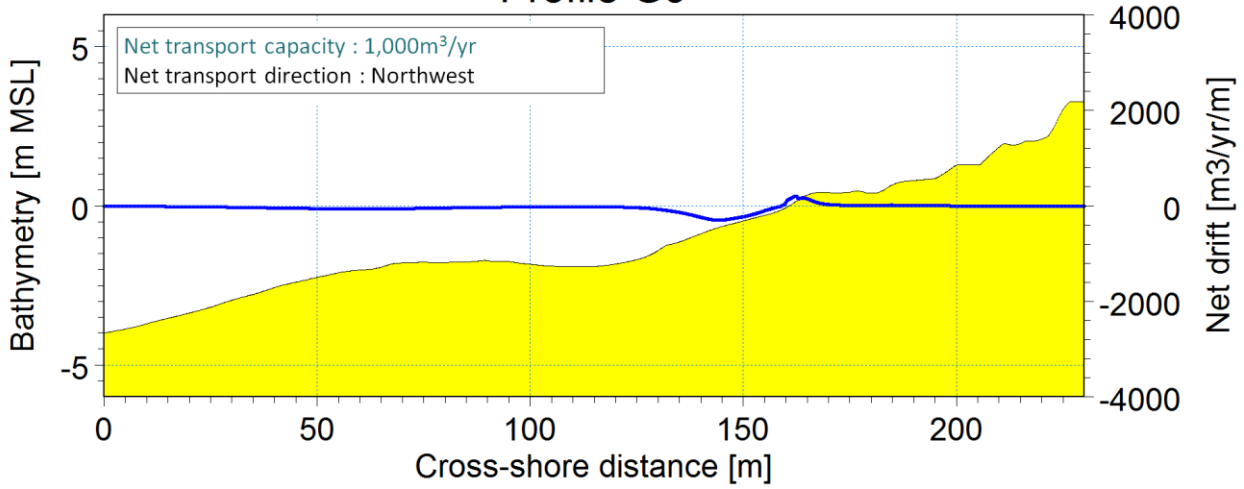




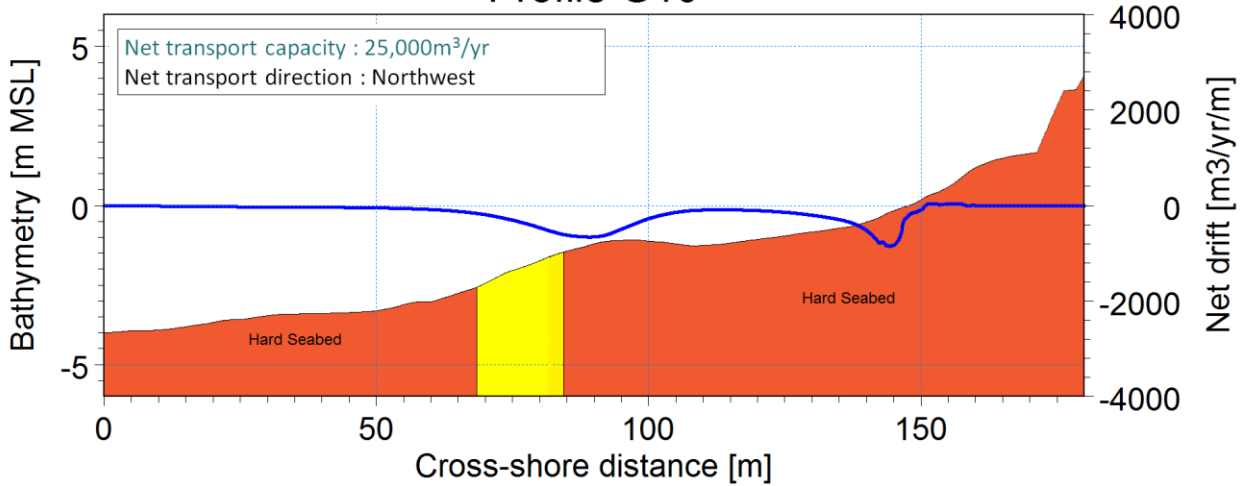




### Profile G9



### Profile G10



### Profile G11

