

METROTIDAL

THAMES ORBITAL

JULY 2021

GENERAL ARRANGEMENTS

SEA REACH THROTTLE, TUNNEL, RAIL AND DATA ORBITAL AND FLOATING SOLAR ARRAY:

- M25 MOTORWAY

CROSSRAIL + C2E

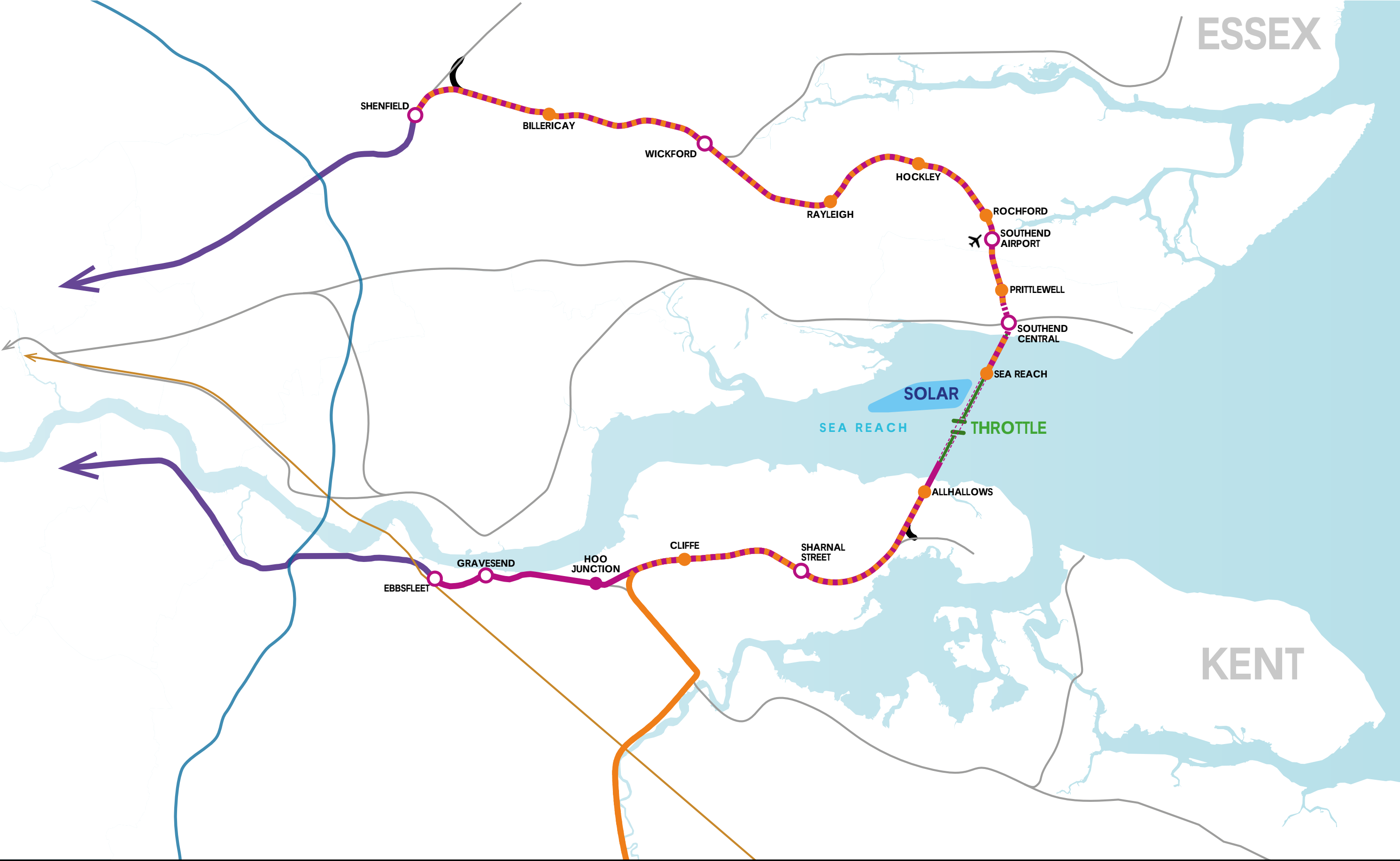
MEDWAY VALLEY LINE EXTN.

FLOATING SOLAR
- ORBITAL / TUNNEL

NEW FREIGHT CHORDS

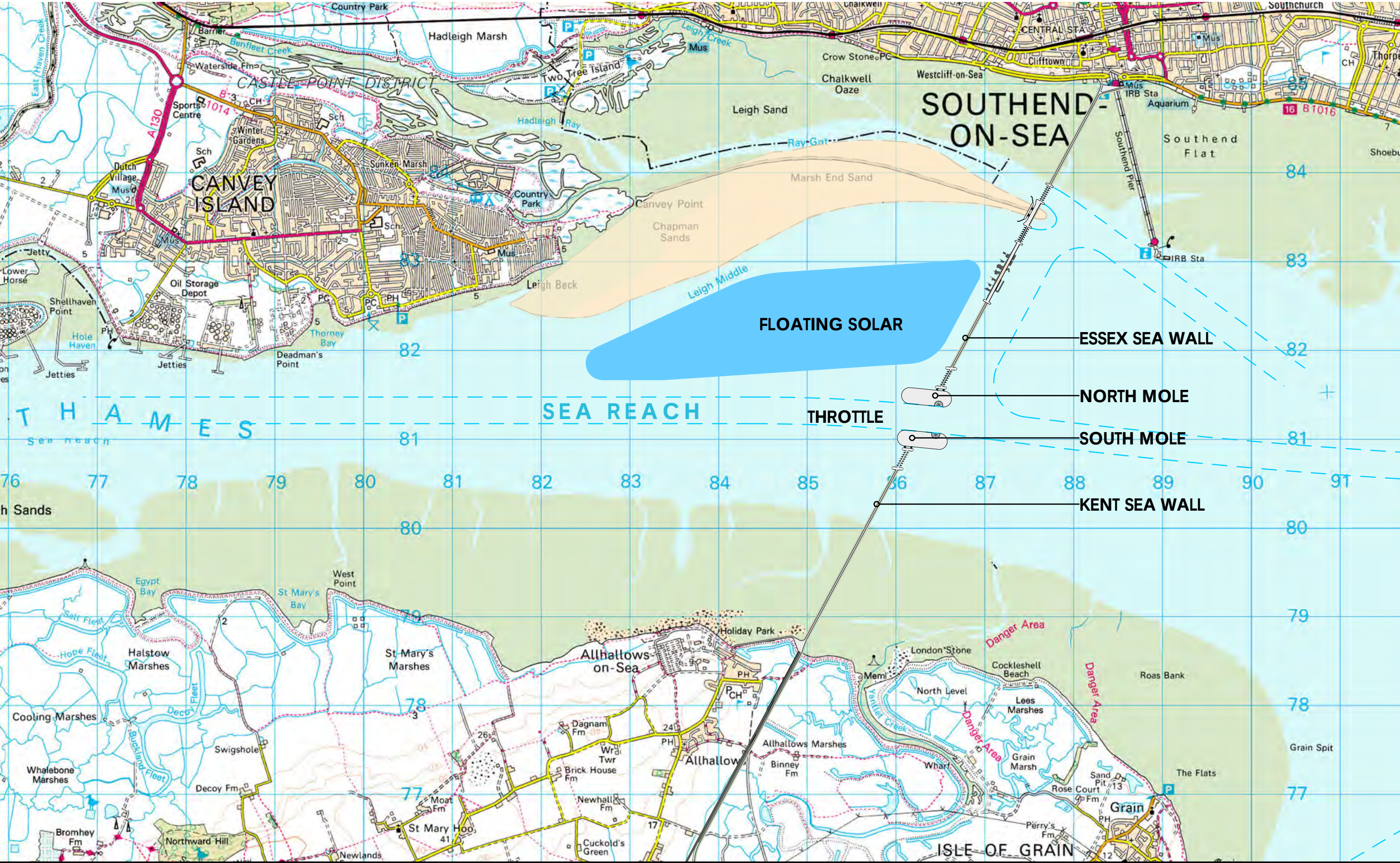
HS1

EXISTING RAIL LINES



GENERAL ARRANGEMENTS

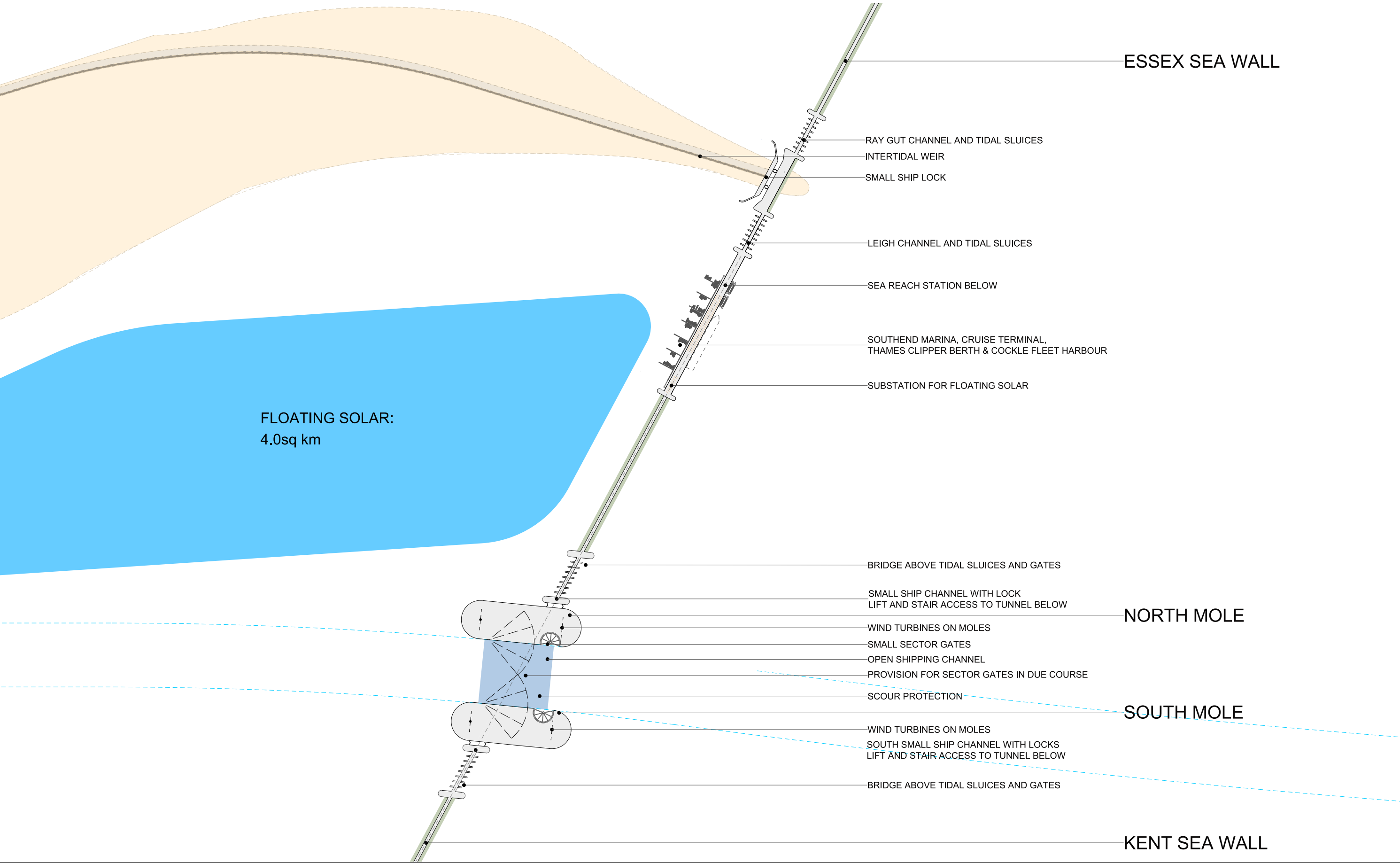
SEA REACH THROTTLE, TUNNEL, RAIL AND DATA ORBITAL AND FLOATING SOLAR ARRAY:



GENERAL ARRANGEMENTS

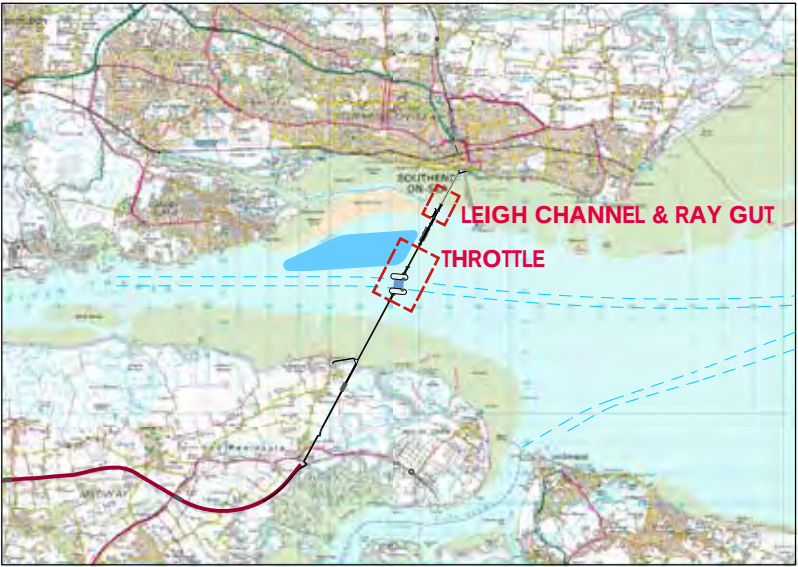
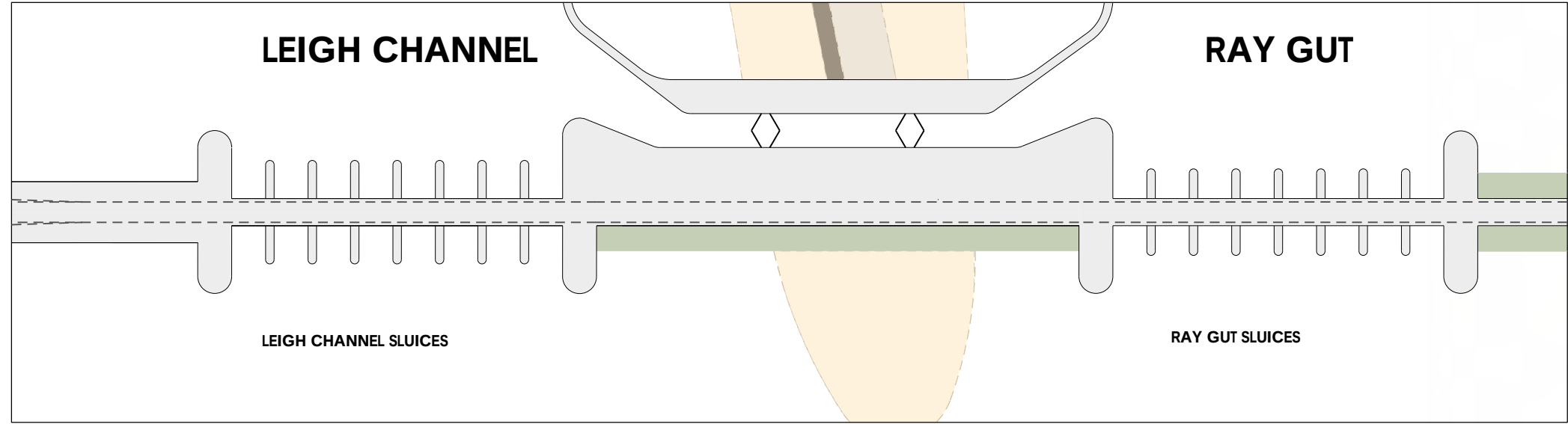
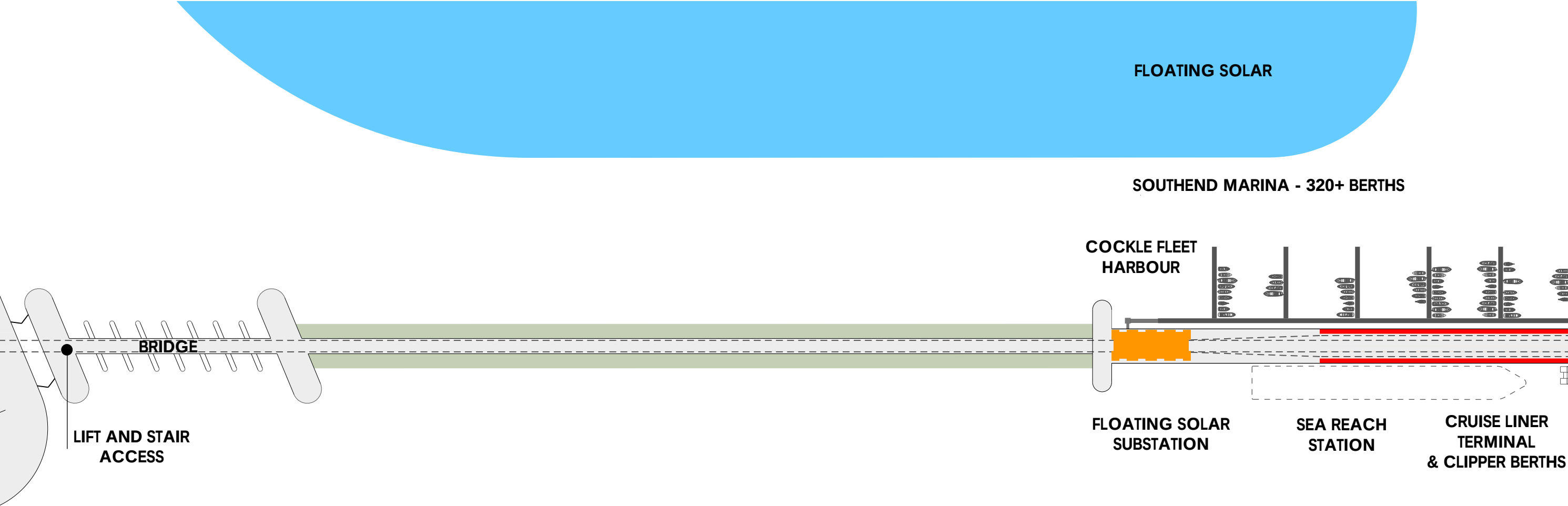
300M THROTTLE AND TIDAL SLUICES WITH SECTOR GATES IN DUE COURSE

EXTENT OF NAVIGATION DREDGING



GENERAL ARRANGEMENTS

SEA REACH STATION BOX, SOUTHEND MARINA, CRUISE LINER TERMINAL, THAMES CLIPPER BERTHS AND COCKLE FLEET HARBOUR



GENERAL ARRANGEMENTS

NEW CONSTRUCTION FOR RAIL AND DATA ORBITAL

- | | | | | | | | |
|----------|----------------------------------|---|---------|----------|------------------|---|--------|
| 1 | DUALLING THE ISLE OF GRAIN LINE: |  | 14.6 KM | 3 | SOUTHEND TUNNEL: |  | 2.0 KM |
| 2 | SEA REACH LINK: |  | 11.2 KM | 4 | FREIGHT CHORD |  | 1.2 KM |



GENERAL ARRANGEMENTS

1. DUALLING THE ISLE OF GRAIN LINE – 14.6KM

DUALLED ISLE OF GRAIN LINE WITH 3 NEW STATIONS



GENERAL ARRANGEMENTS

DUALLING THE ISLE OF GRAIN LINE – EXISTING DUAL TRACK INFRASTRUCTURE



GENERAL ARRANGEMENTS

2. SEA REACH LINK – 11.2KM

4KM – OPEN TRACK

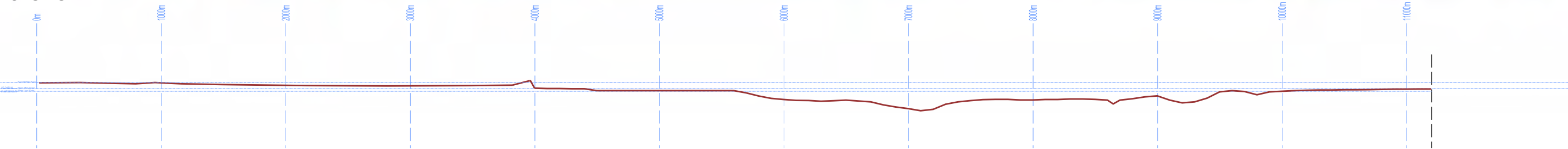
3.8KM – SEA WALL
TUNNEL

3.0KM – SUB-SEA TUNNEL

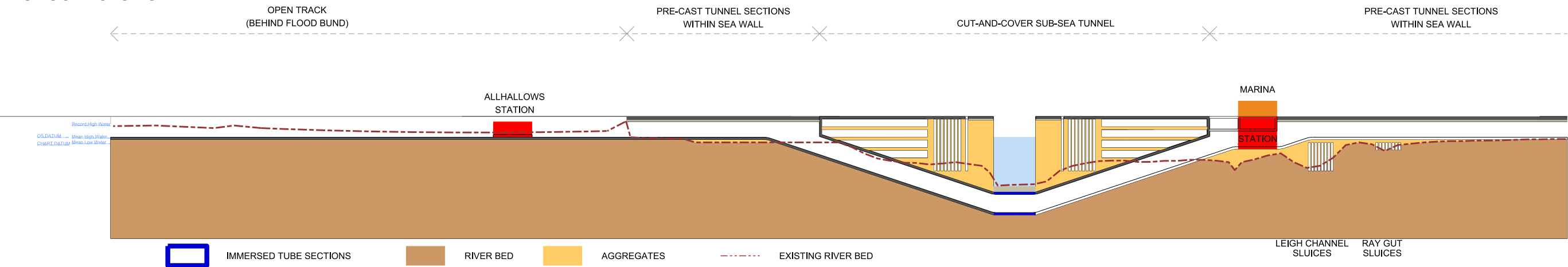
0.4KM – ENCLOSED
BRIDGES



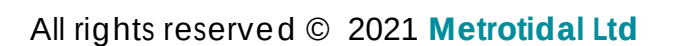
EXISTING SECTION



PROPOSED SECTION



LONGITUDINAL TUNNEL SECTION



GENERAL ARRANGEMENTS

CONSTRUCTION PHASING

PHASE 1:	SEA DREDGED AGGREGATE BUNDS	
PHASE 2:	SOUTH MOLE, LEIGH CHANNEL & RAY GUT SLUICES	
PHASE 3:	NORTH MOLE	
PHASE 4:	COMPLETION OF ESSEX SEA WALL	

PHASE 1



PHASE 2



PHASE 3



PHASE 4



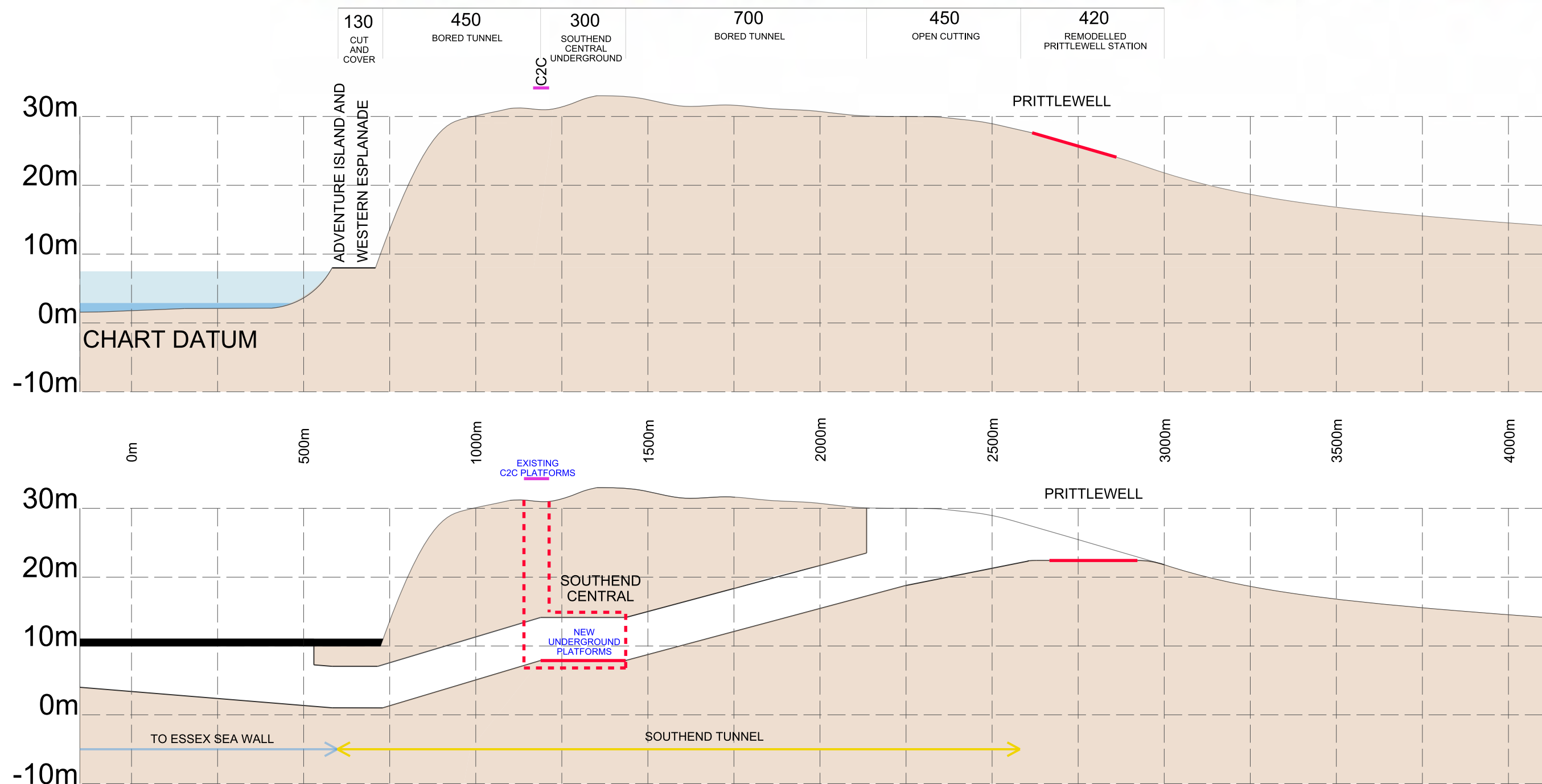
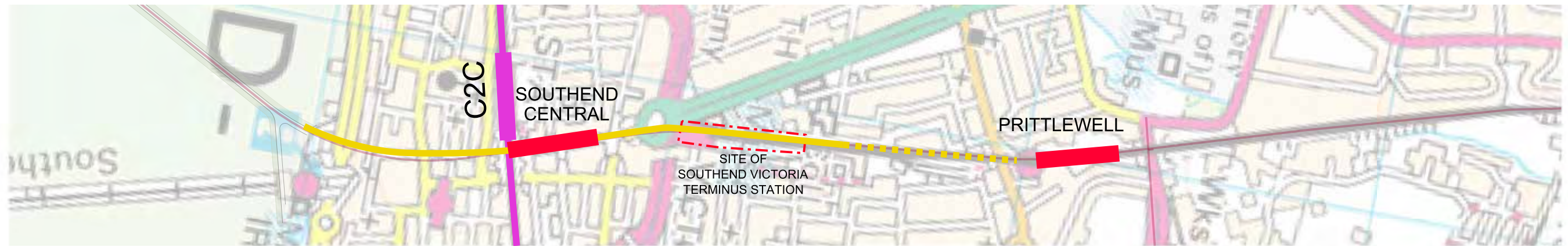
GENERAL ARRANGEMENTS

3. SOUTHEND TUNNEL

2KM – SOUTHEND TUNNEL:

1.5KM – TUNNEL

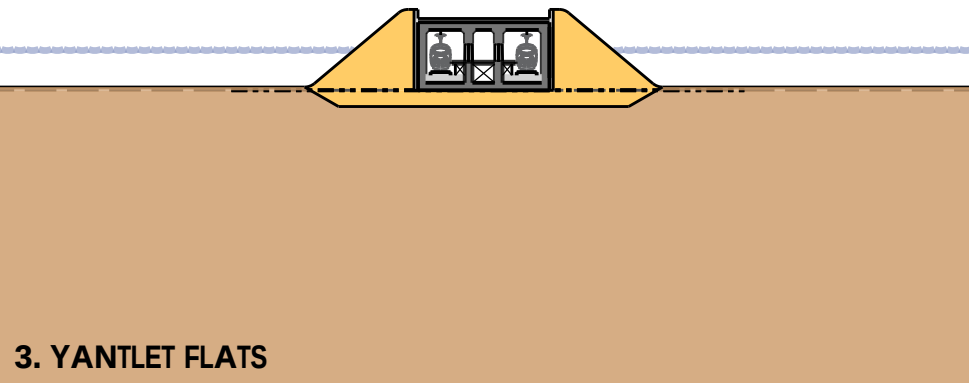
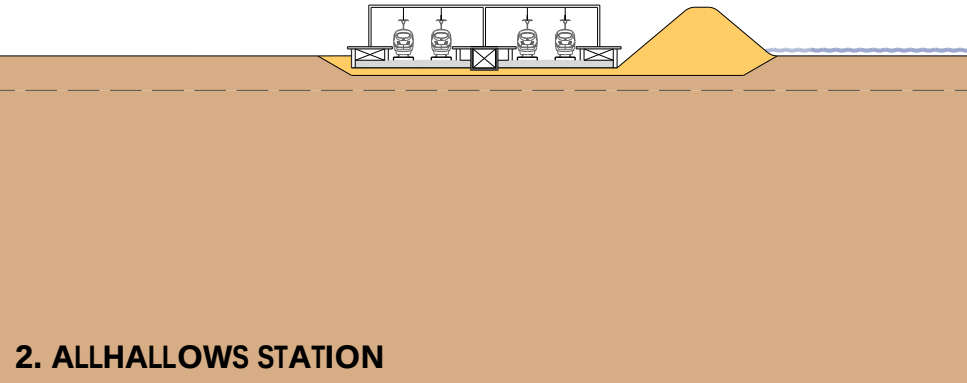
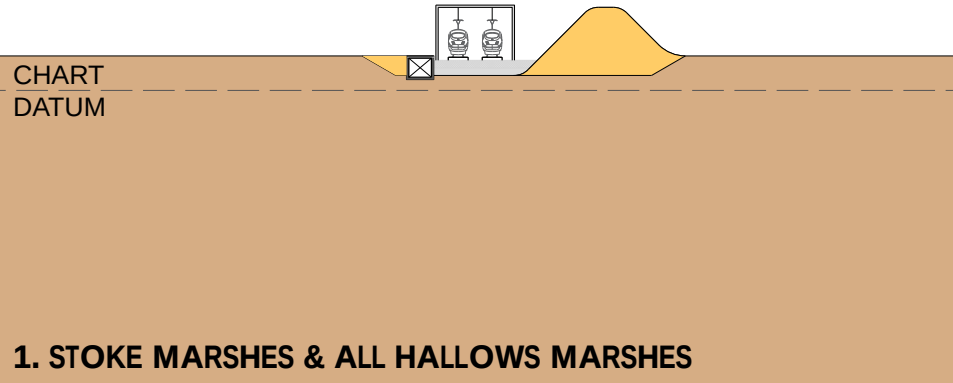
0.5KM – CUTTING APPROACH



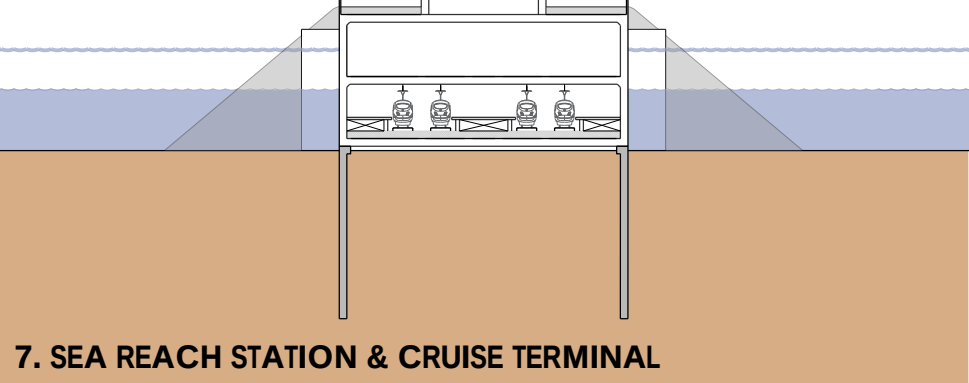
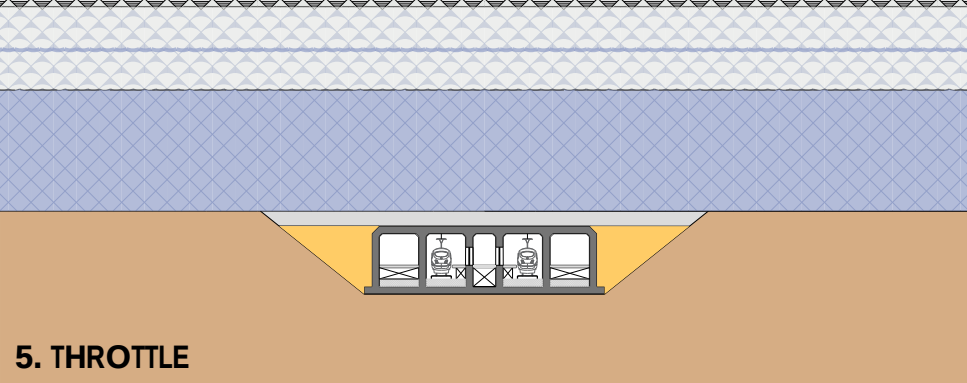
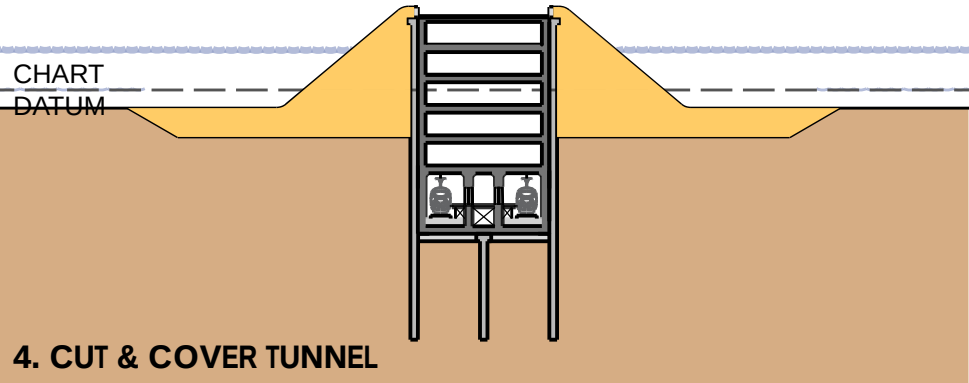
GENERAL ARRANGEMENTS

INDICATIVE SECTIONS

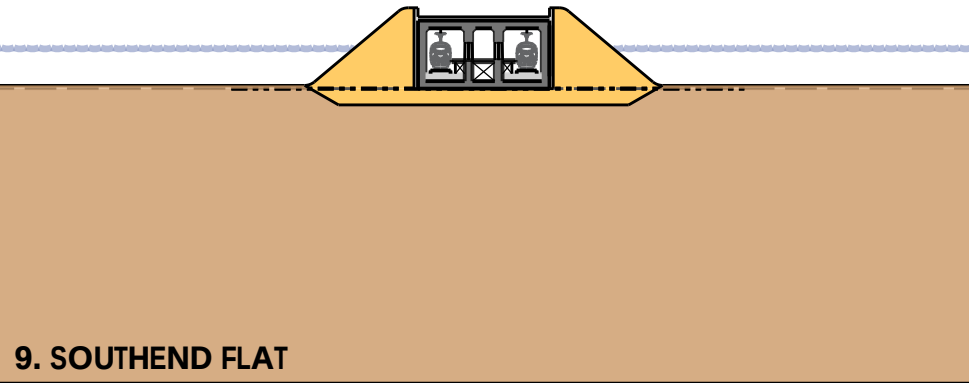
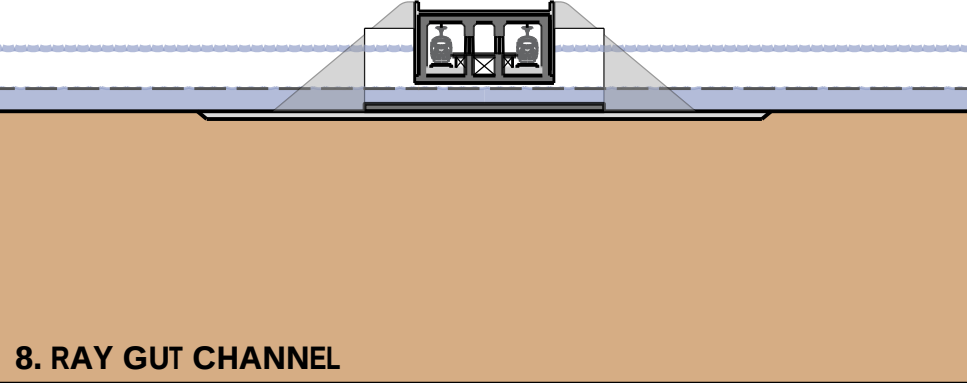
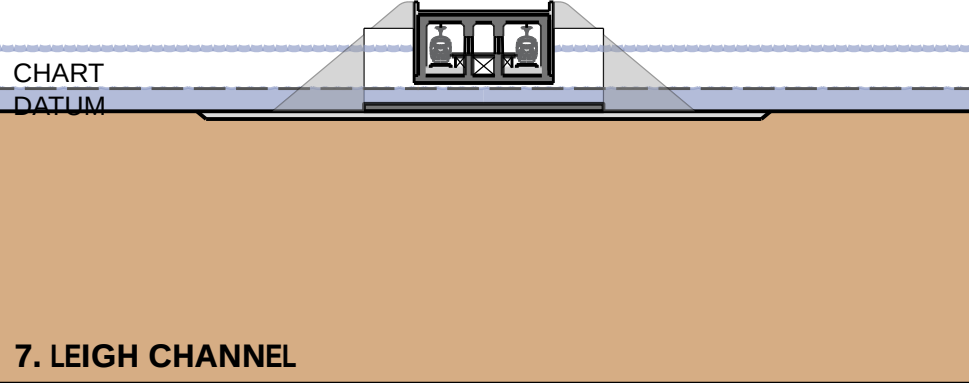
KENT SEA WALL



SEA REACH TUNNEL



ESSEX SEA WALL



INTEGRATED INFRASTRUCTURE

Flood Defence



Renewable Energy



Rail and Cycle Connectivity

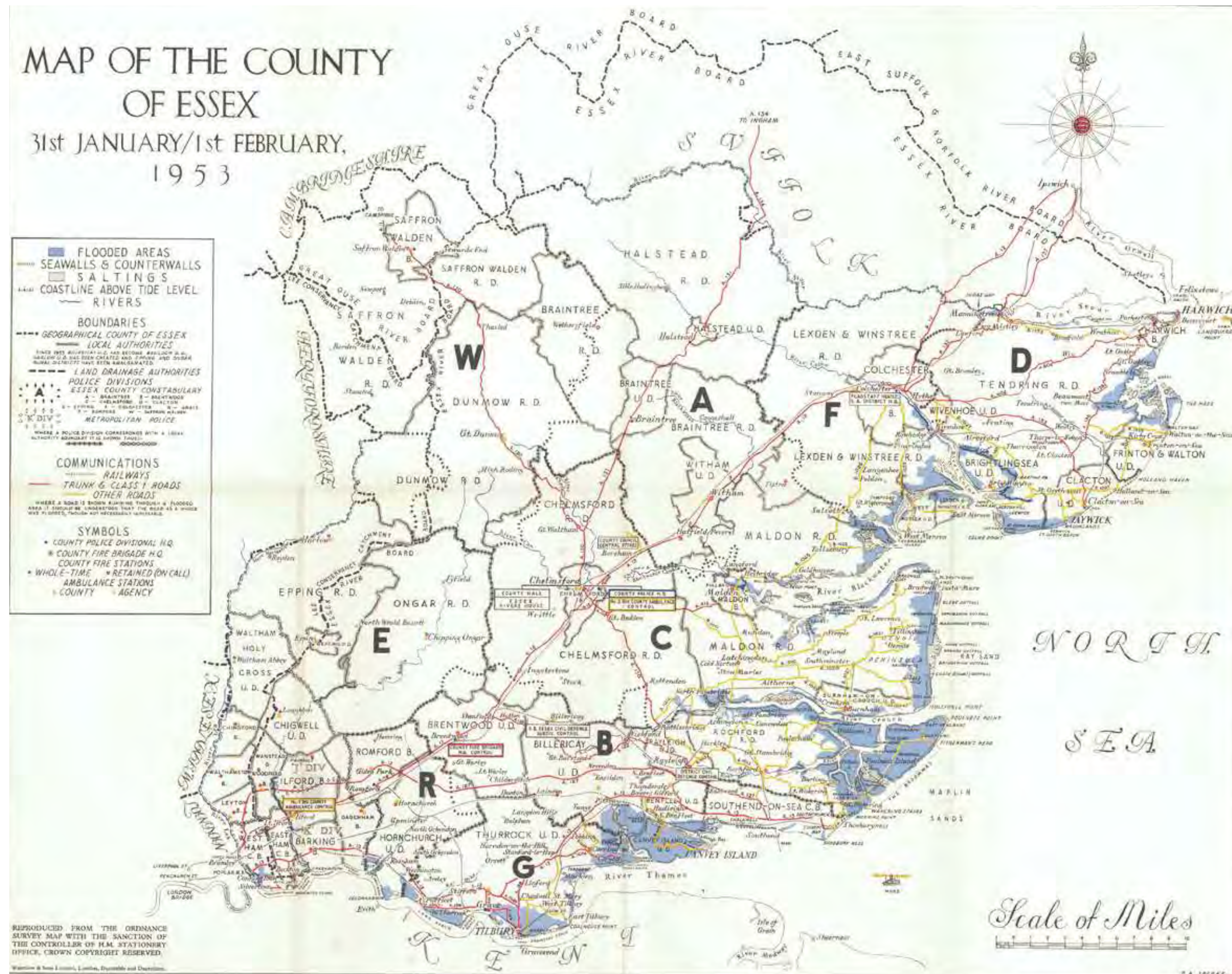


Data Storage and Utilities



Sustainable Development

FLOOD DEFENCE



TE2200 FLOOD DEFENCE

FLOOD DEFENCES FOR THE 22ND CENTURY

TE2100 PROGRAMME AREA

ADDITIONAL AREA
OF FLOOD PROTECTION
110 KM²

LONG REACH BARRIER
WITH RAISED SEA WALLS
106 KM

METROTIDAL OPEN THROTTLE
FLOOD DEFENCE
8 KM



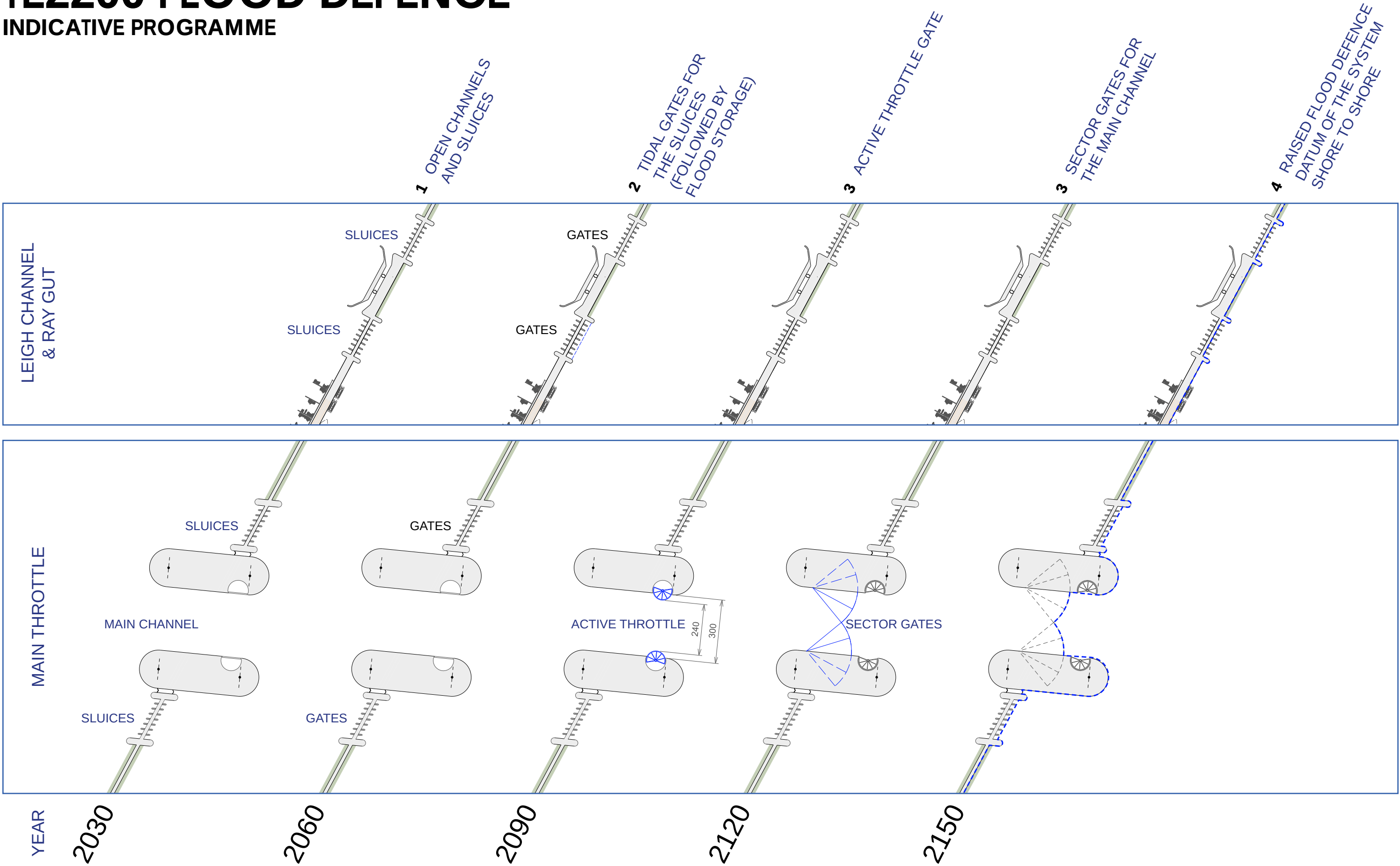
TE2200 FLOOD DEFENCE

FLOOD STORAGE AREA: 10.0 SQ.KM



TE2200 FLOOD DEFENCE

INDICATIVE PROGRAMME



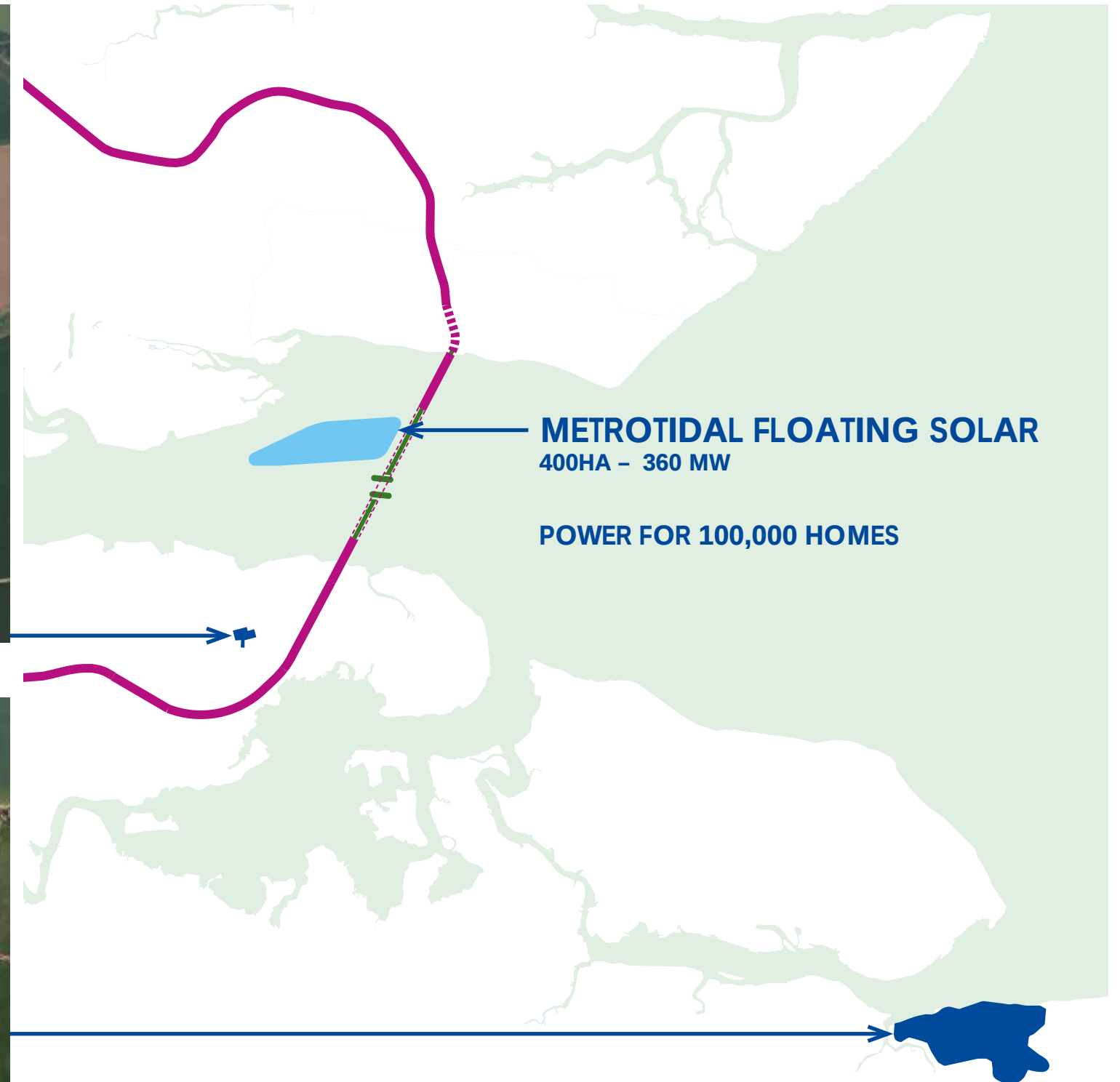
RENEWABLE ENERGY

FLOATING SOLAR



RENEWABLE ENERGY

LOCAL SOLAR



RENEWABLE ENERGY

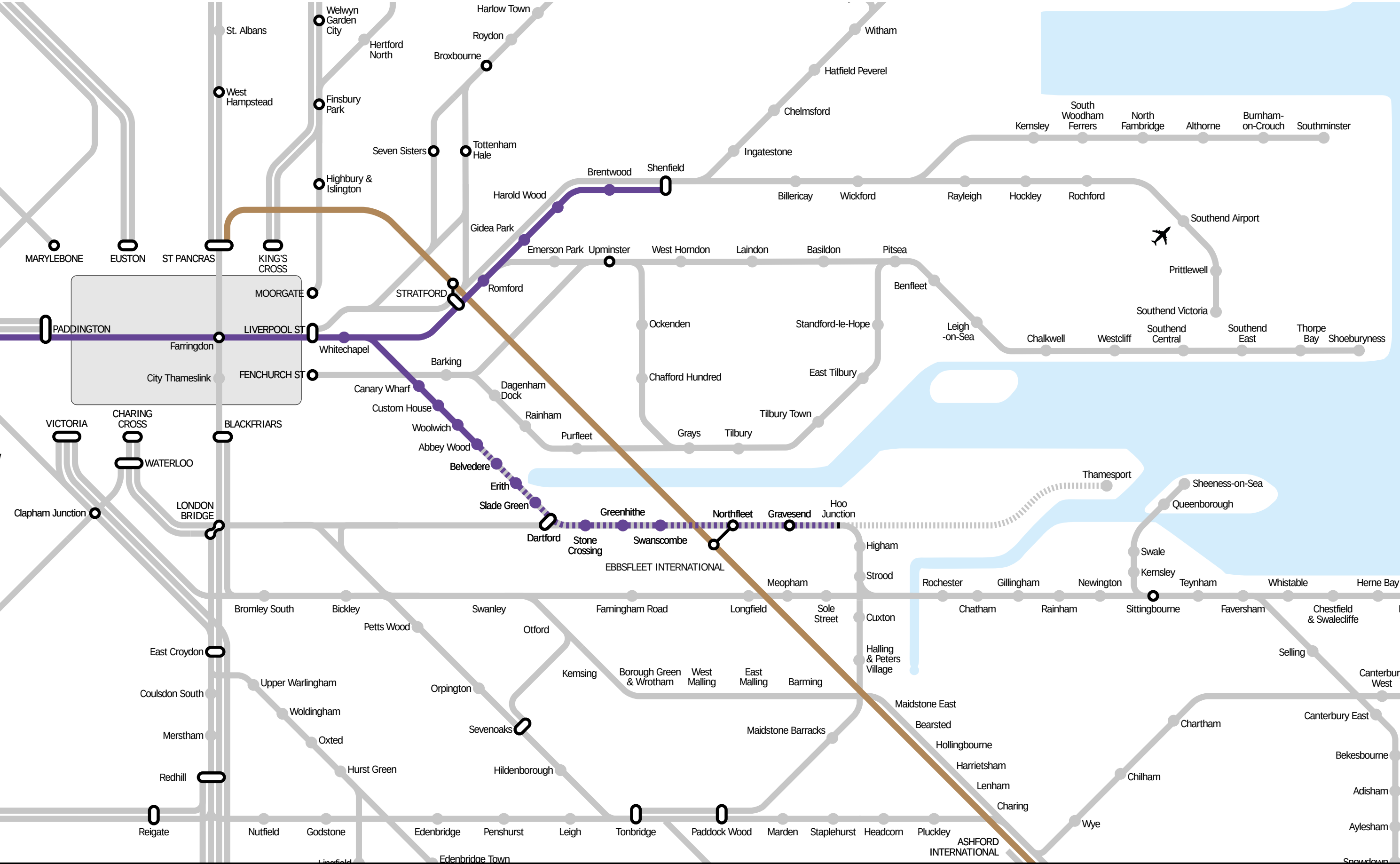
SOLAR POWER, WIND POWER AND INTERTIDAL FLOOD STORAGE



RAIL CONNECTIVITY

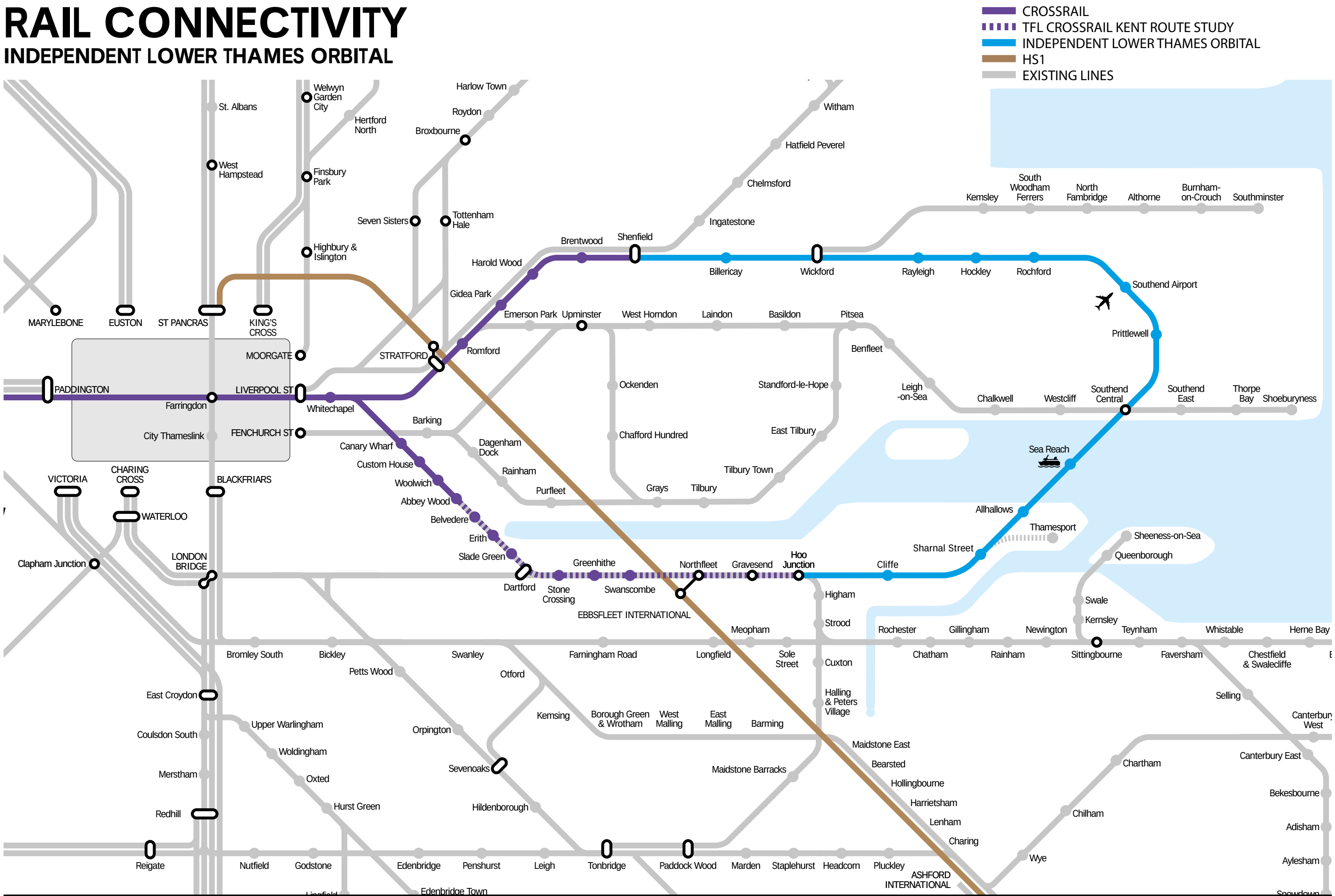
CROSSRAIL + TFL KENT ROUTE STUDY

- CROSSRAIL
- TFL CROSSRAIL KENT ROUTE STUDY
- HS1
- EXISTING LINES – PASSENGERS / FREIGHT ONLY



RAIL CONNECTIVITY

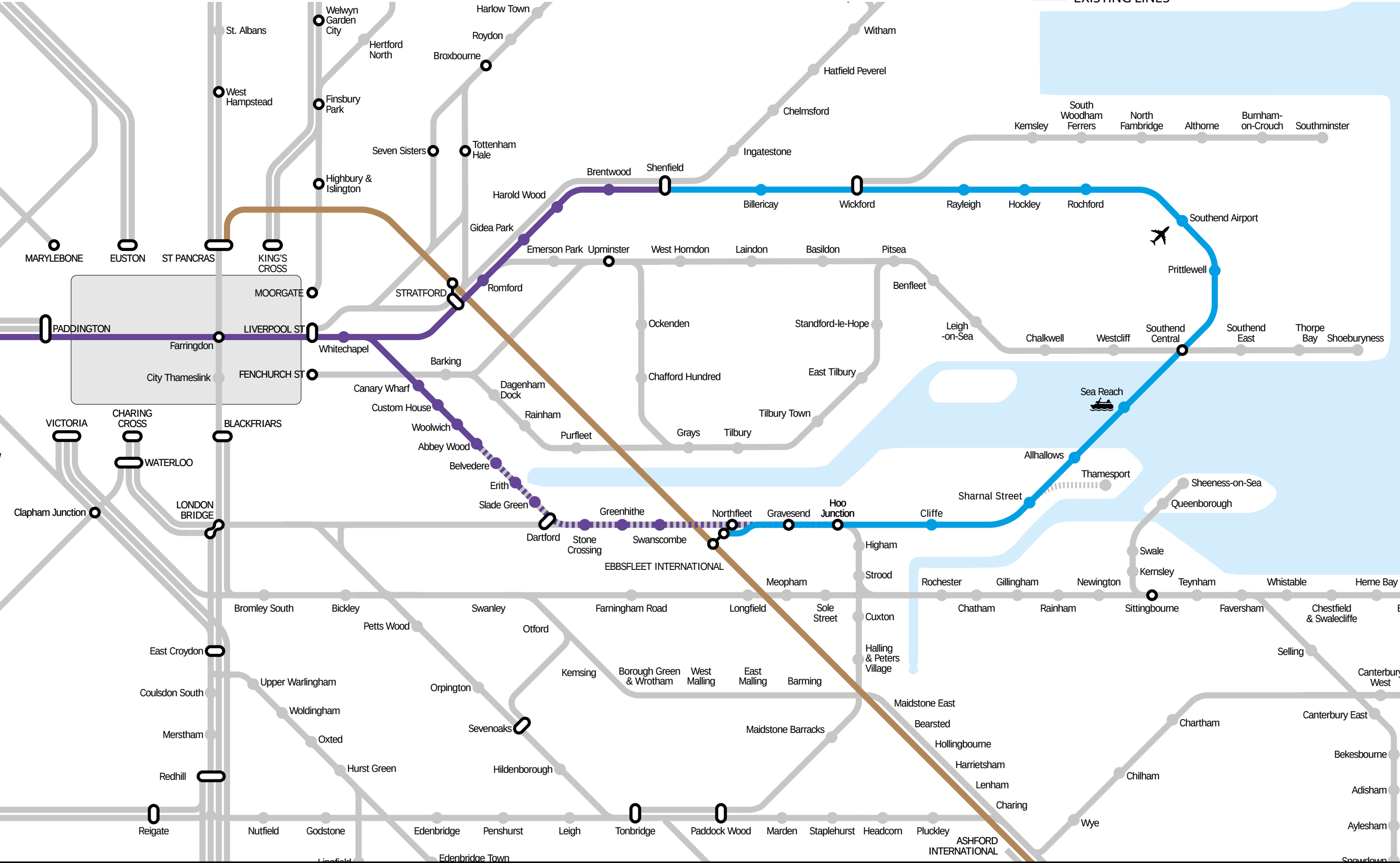
INDEPENDENT LOWER THAMES ORBITAL



RAIL CONNECTIVITY

LOWER THAMES ORBITAL - EXTENSION TO EBBSFLEET

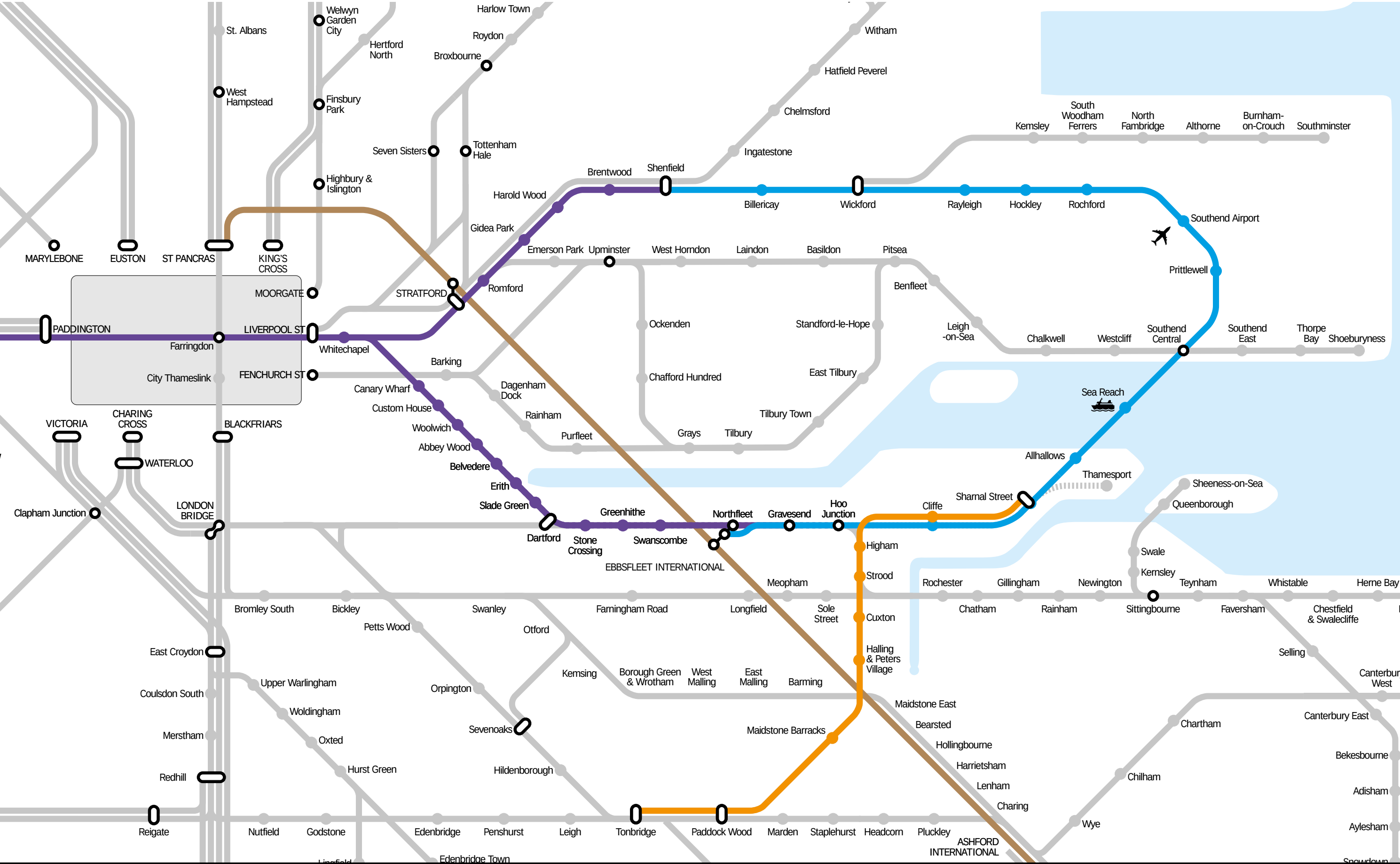
- CROSSRAIL
- TFL CROSSRAIL KENT ROUTE STUDY
- LOWER THAMES ORBITAL
- HS1
- EXISTING LINES



RAIL CONNECTIVITY

CROSSRAIL & ESSEX KENT ORBITALS

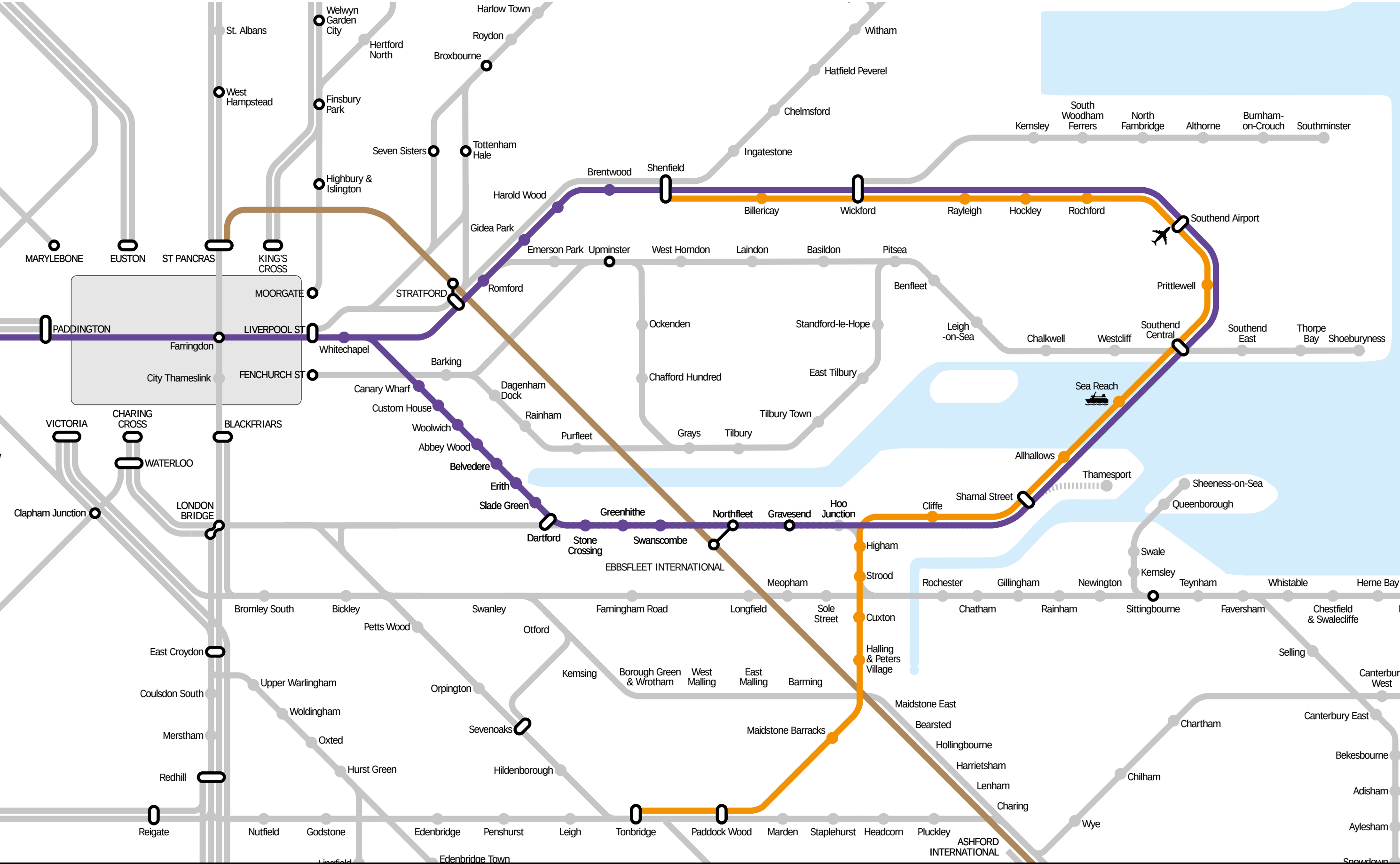
- LOWER THAMES ORBITAL
- MEDWAY VALLEY LINE EXTENSION
- HS1
- EXISTING LINES



RAIL CONNECTIVITY

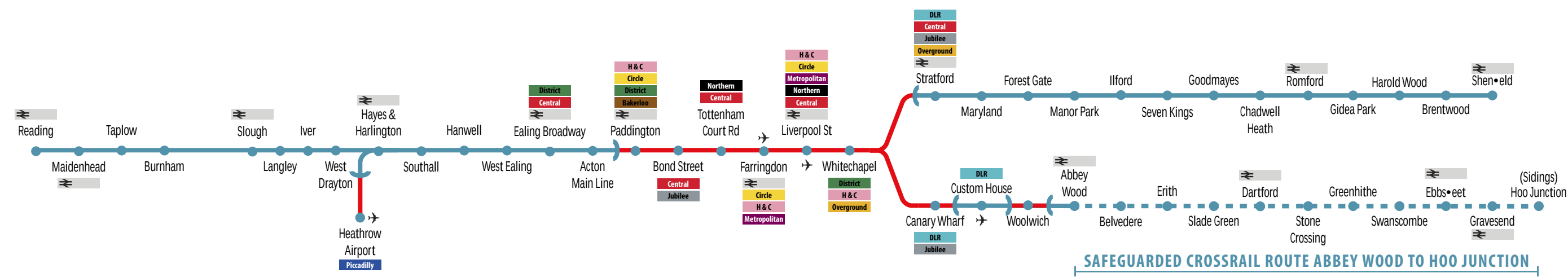
CROSSRAIL & ESSEX KENT ORBITALS

- CROSSRAIL ORBITAL EXPRESS
- ESSEX KENT ORBITAL
- HS1
- EXISTING LINES

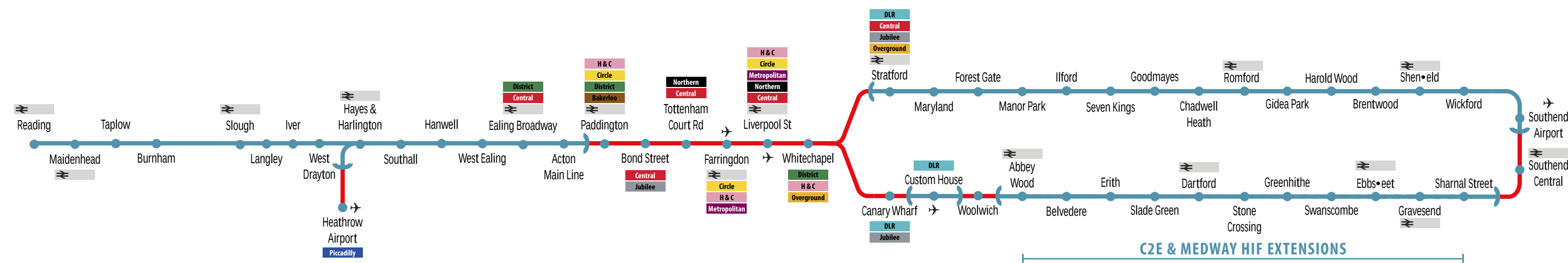


RAIL CONNECTIVITY

CROSSRAIL



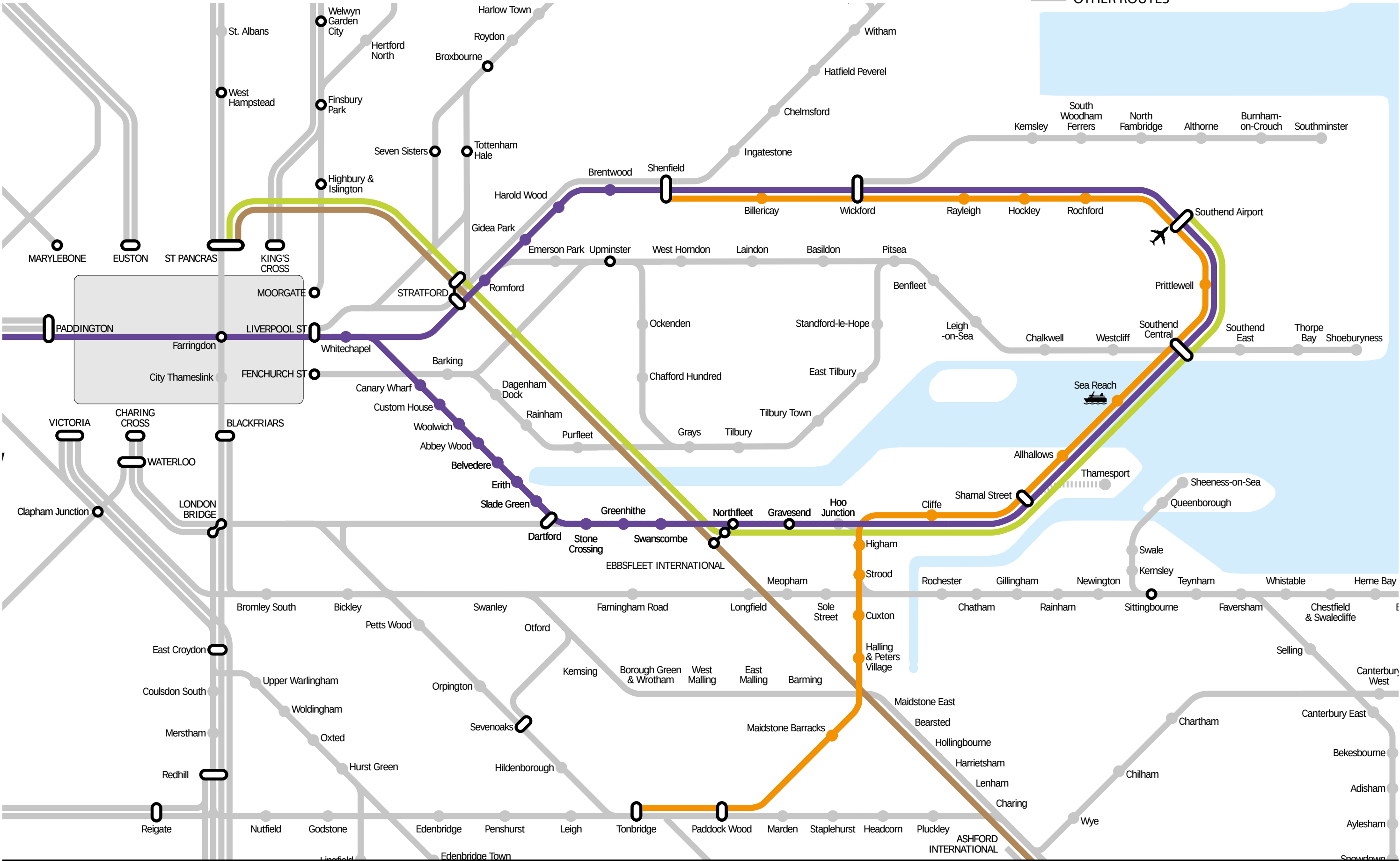
CROSSRAIL ORBITAL EXPRESS



RAIL CONNECTIVITY

CENTRAL LONDON ESTUARY EXPRESS

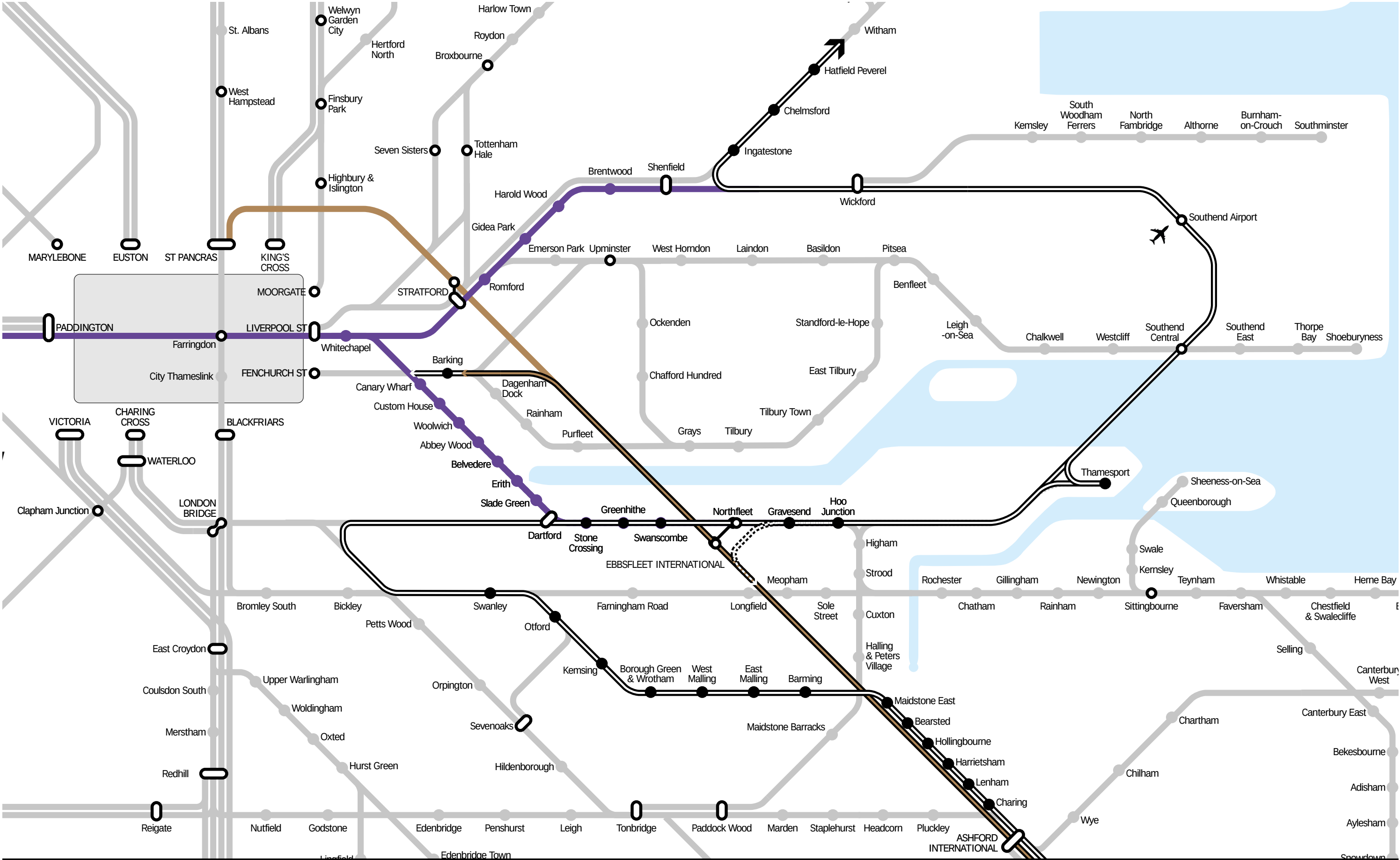
- CROSSRAIL ORBITAL EXPRESS
- ESSEX KENT ORBITAL
- CENTRAL LONDON ESTUARY EXPRESS
- HIGH SPEED 1
- OTHER ROUTES



RAIL CONNECTIVITY

FREIGHT LINKS

- CLASSIC / HIGH SPEED FREIGHT LINES
- CROSSRAIL ORBITAL
- HS1
- EXISTING LINES



RAIL CONNECTIVITY

FREIGHT LINKS

- F2N FREIGHT ROUTE
- = THAMESPORT LINK
- CLASSIC FREIGHT
- - - - - OPTIONAL HS1 LINK



RAIL CONNECTIVITY

GREEN BELT AND BEYOND

- GREEN BELT
- CROSSRAIL ORBITAL EXPRESS
- ESSEX KENT ORBITAL
- FREIGHT ROUTES
- HS1

12KM OF NEW LINE THROUGH THE TUNNEL

+

2 NEW CHORDS;
AT SHENFIELD AND HOO JUNCTION

=

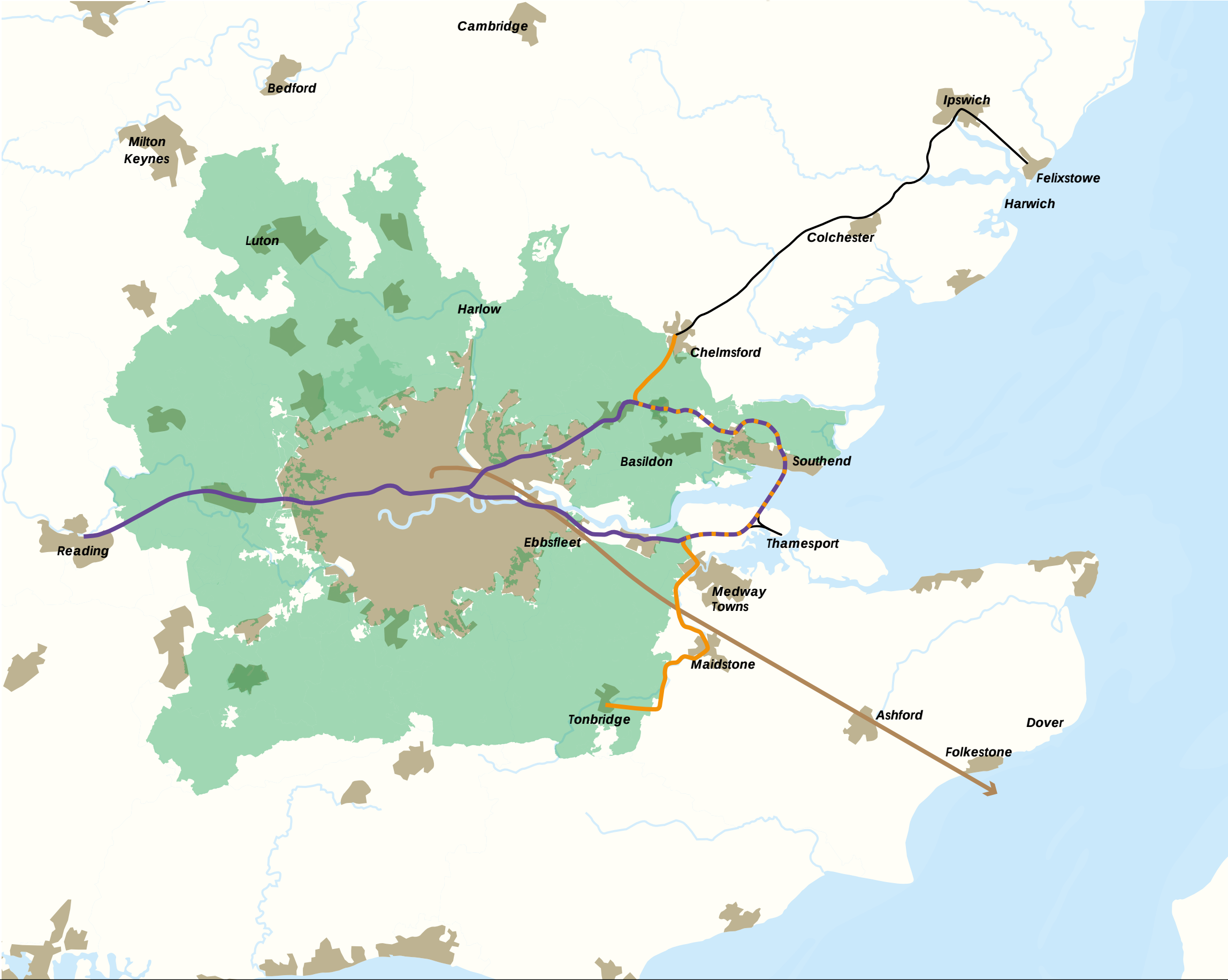
132KM CROSSRAIL ORBITAL

+

120KM ESSEX – KENT ORBITAL

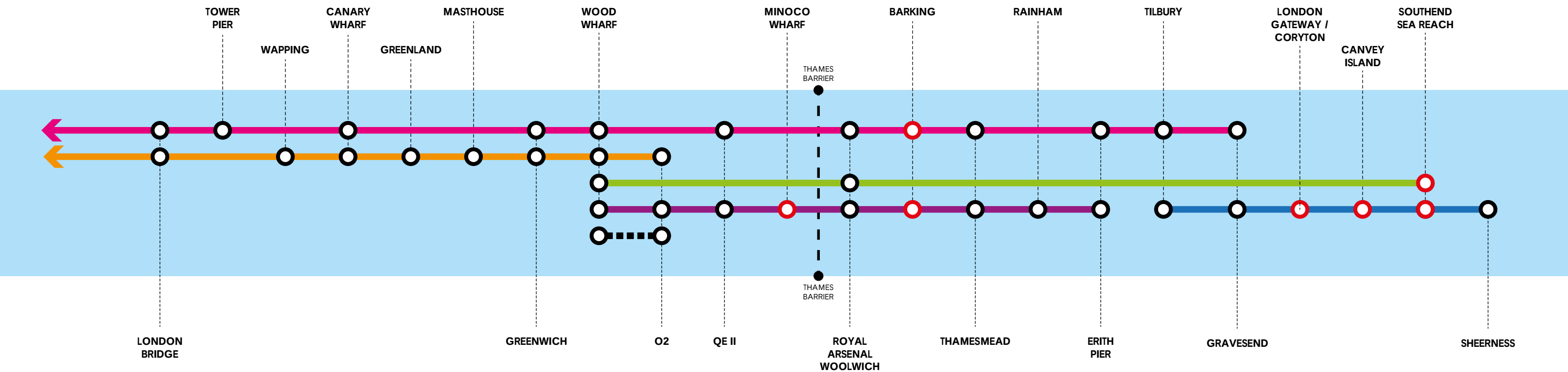
+

150KM FELIXSTOWE – THAMESPORT
NIGHT FREIGHT LINK



RIVER CONNECTIONS

THAMES CLIPPER SERVICES

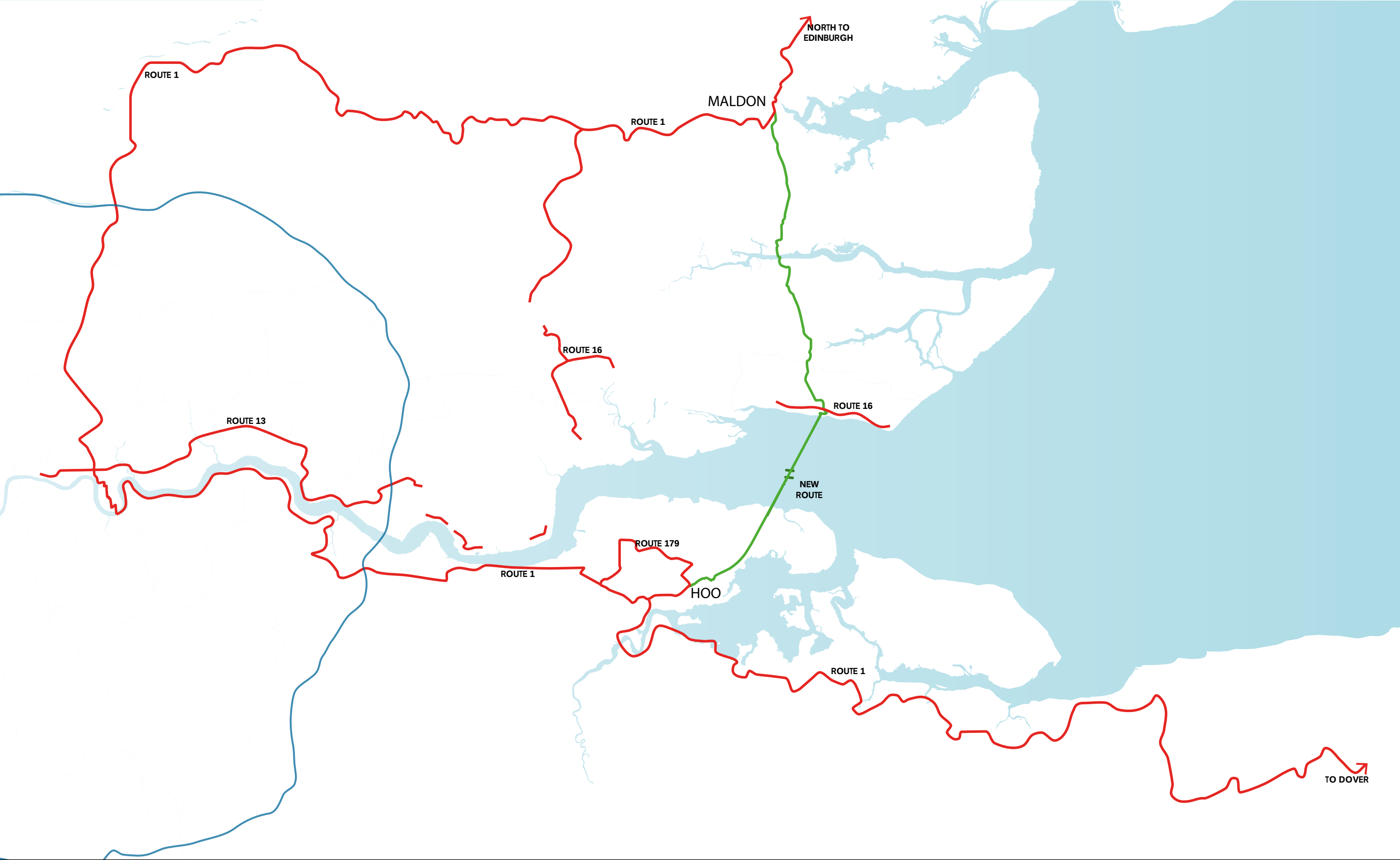


- / ○ MOORING PIERS: EXISTING / PROPOSED
- EASTERN SERVICE 1: WATERLOO – GRAVESEND
 - EASTERN SERVICE 2: BLACKFRIARS – THE O2
 - ESTUARY EXPRESS: SEA REACH – WOOD WHARF
 - INNER ESTUARY SERVICE: WOOD WHARF – ERITH
 - OUTER ESTUARY SERVICE: TILBURY – SOUTHEND – SHEERNESS

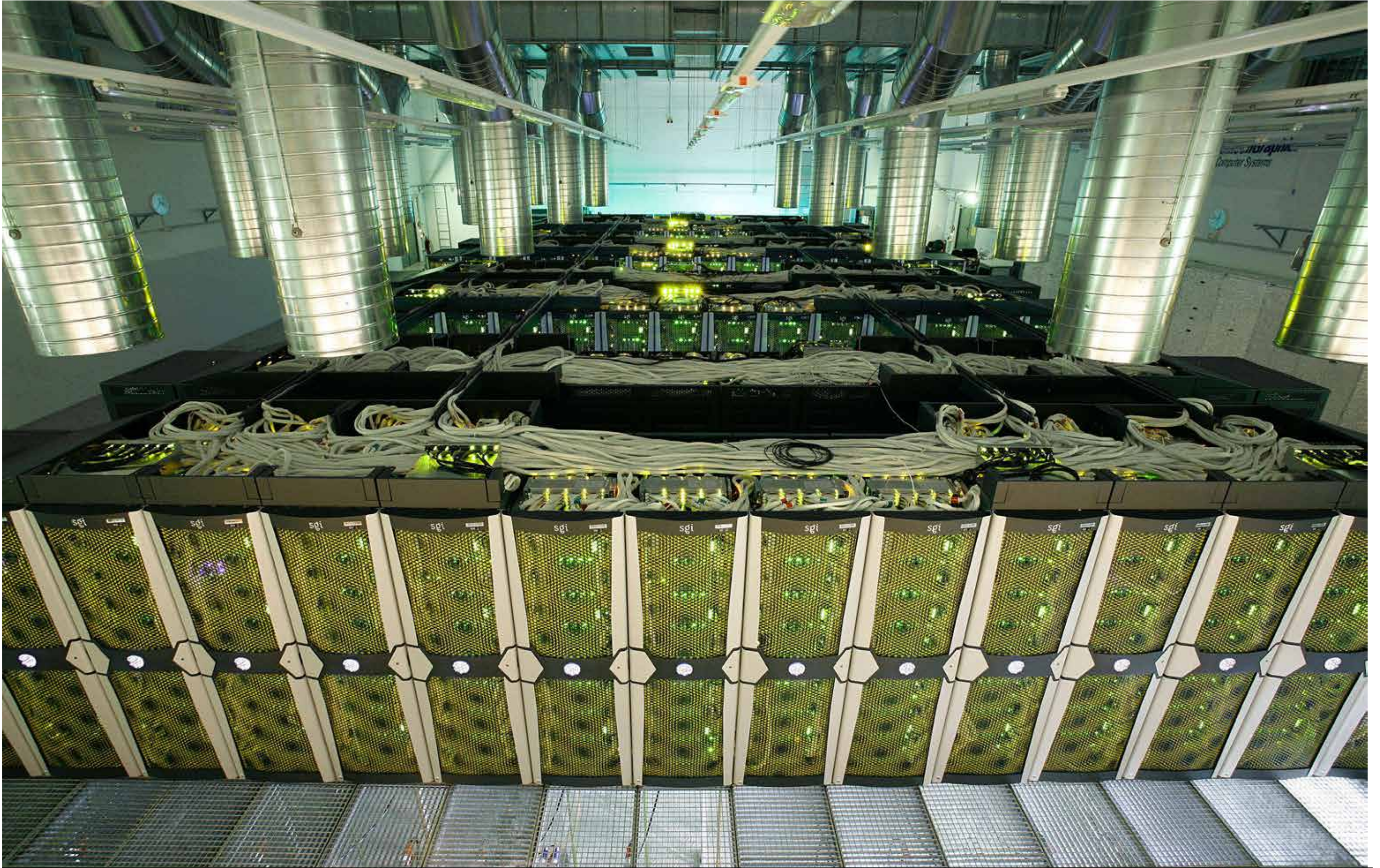
CYCLING CONNECTIVITY

Sustrans National Cycle Network; ROUTE 1

EXISTING ROUTES
PROPOSED NEW ROUTE - 44KM
EXISTING ROUTE 1 MALDON TO HOO - 162KM

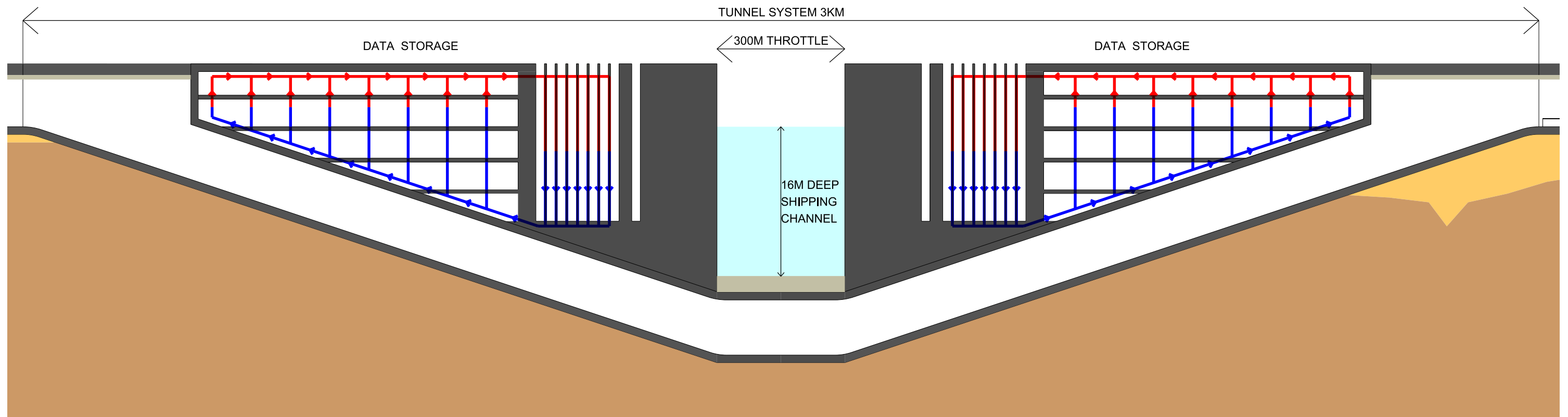
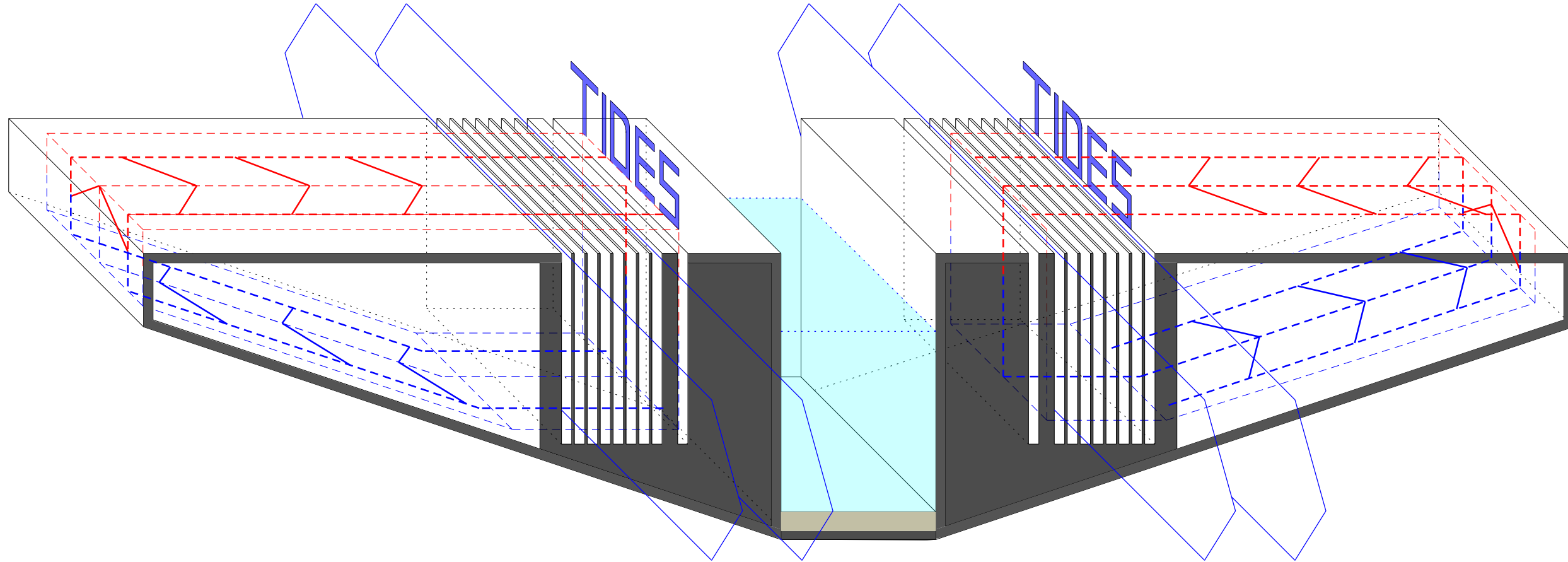


DATA STORAGE AND UTILITIES



DATA STORAGE AND UTILITIES

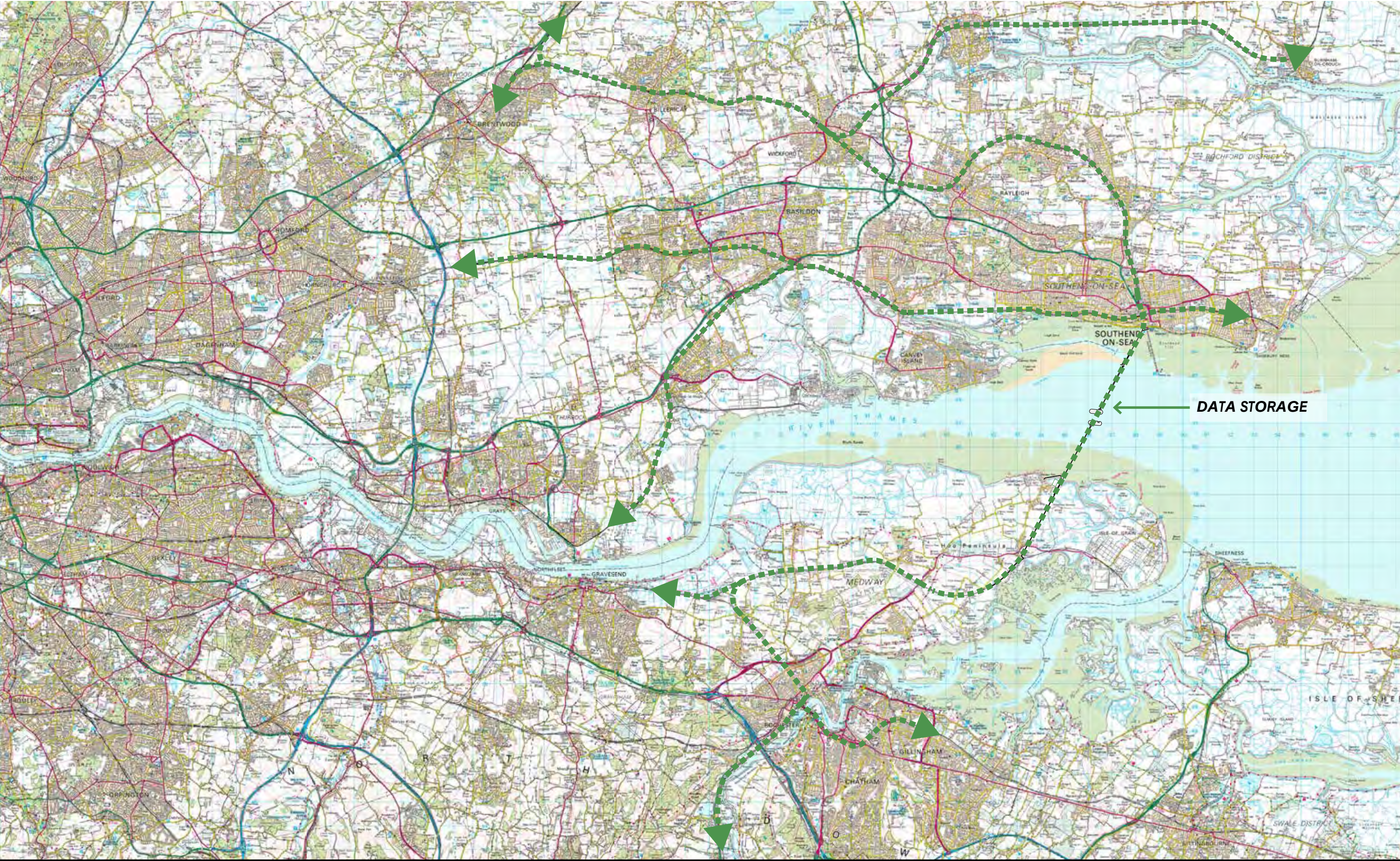
TIDAL COOLING SYSTEM



DATA STORAGE AND UTILITIES

INFRASTRUCTURE UTILITY WAYLEAVES

DATA STORAGE 
DISTRIBUTION 

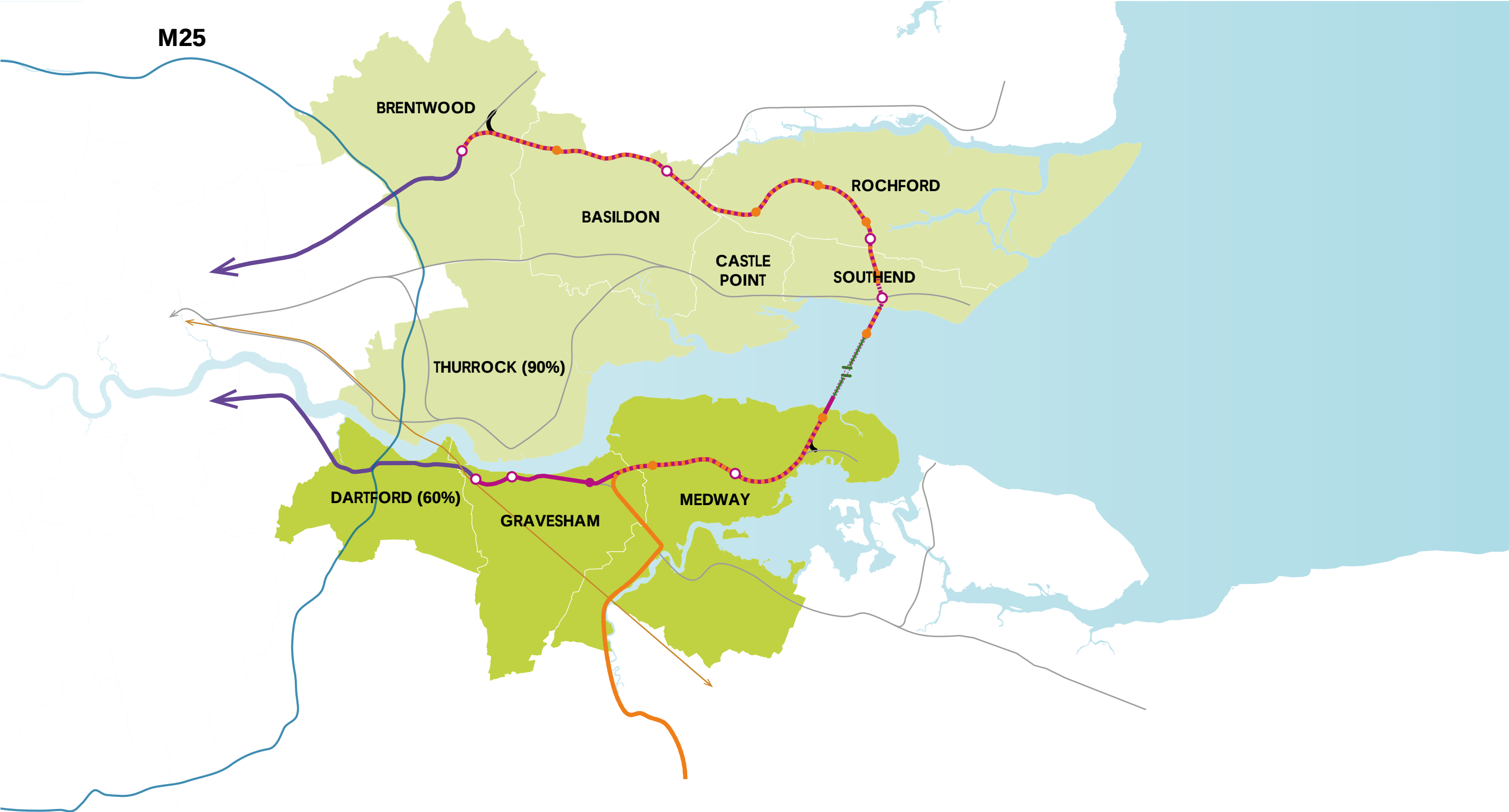


SUSTAINABLE DEVELOPMENT

POPULATION AND NEW HOMES BEYOND THE M25

- SOUTH ESSEX
- NORTH KENT
- TOTALS

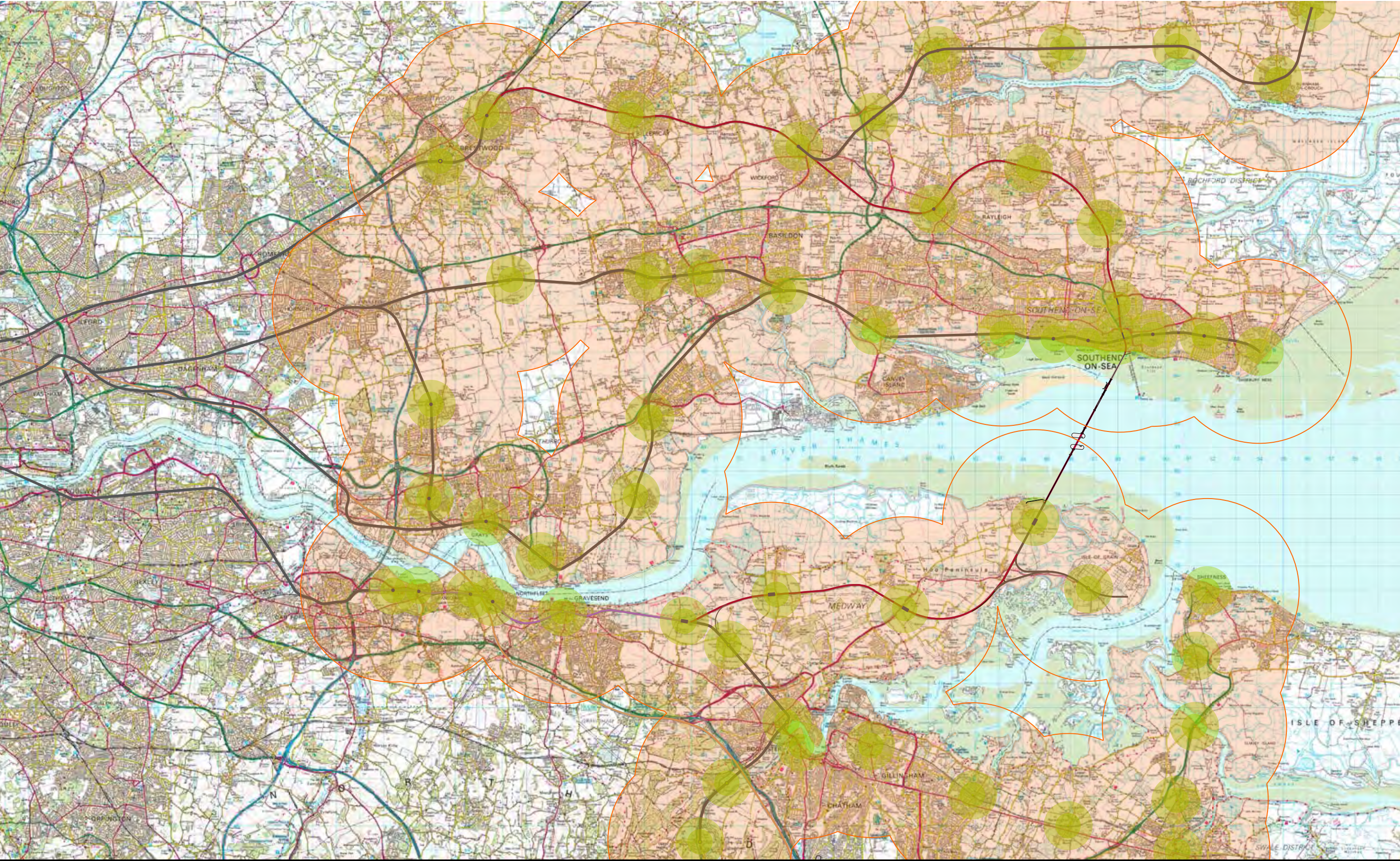
POPULATION	NEW HOMES
784,927	67,256
467,562	30,801
1,252,489	98,057



SUSTAINABLE DEVELOPMENT

SERVED BY 55 NO. STATIONS BEYOND THE M25

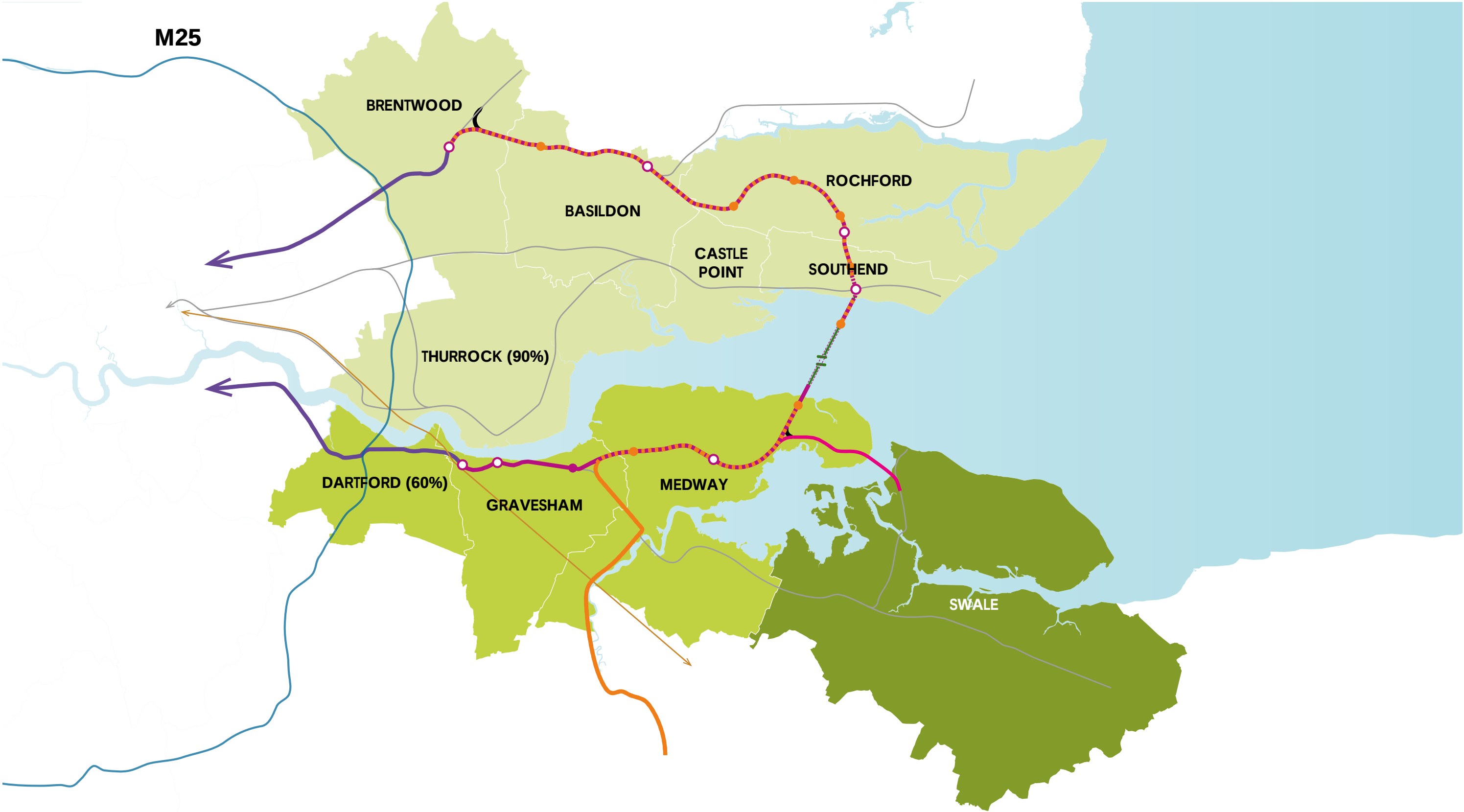
4KM MICROMOBILITY
ACCESSIBILITY



GROWTH BEYOND THE M25

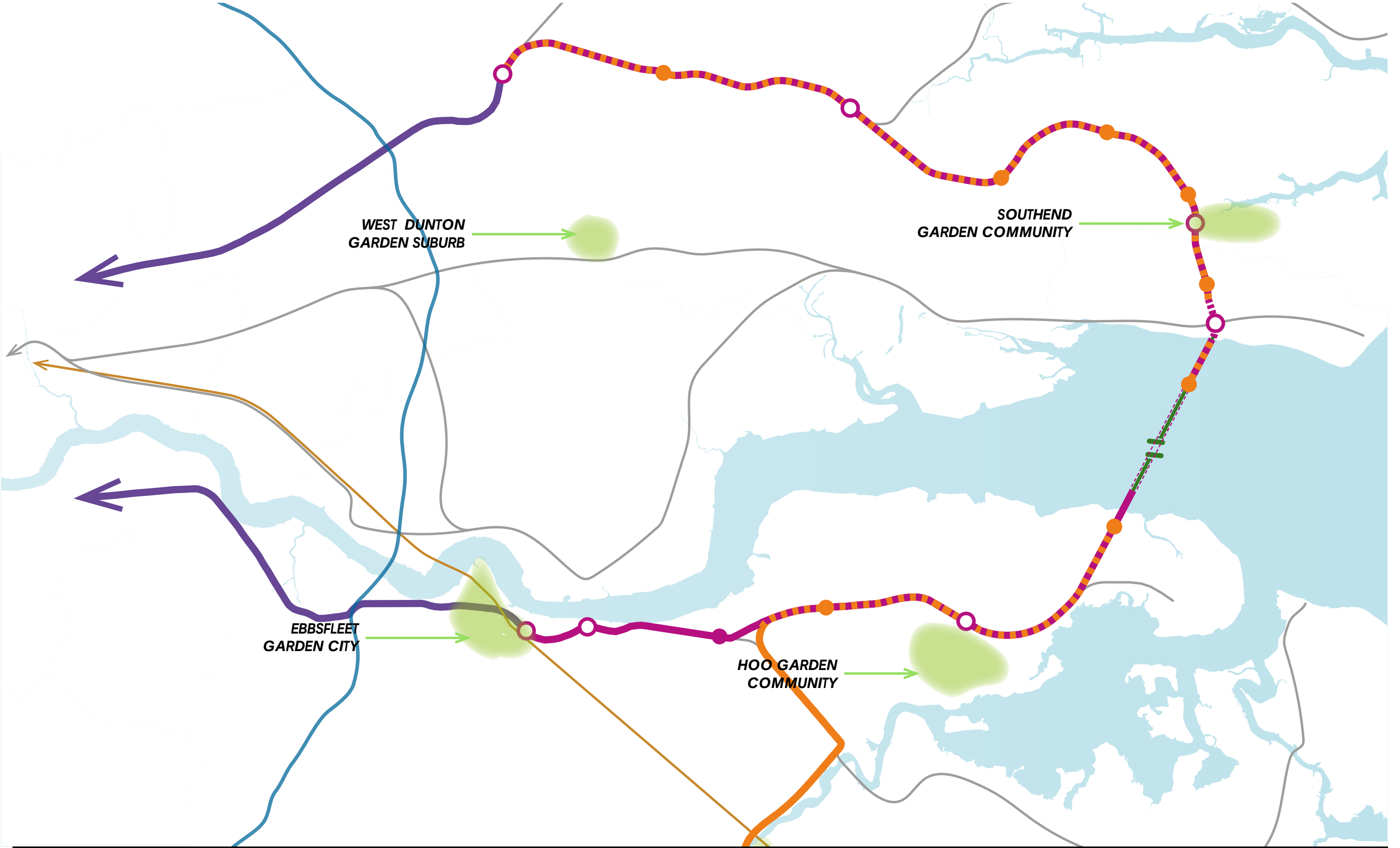
POPULATION AND NEW HOMES DELIVERY

	SOUTH ESSEX	784,927	67,256
	NORTH KENT	467,562	30,801
	THAMES ORBITAL	1,252,489	98,057
	THAMES & MEDWAY ORBITAL	1,401,690	111,249



SUSTAINABLE DEVELOPMENT

NEW GARDEN COMMUNITY GROWTH ZONES FOR 30,000 - 60,000 HOMES



SUSTAINABLE LEISURE & TOURISM

RAIL, DATA, SOLAR AND HOO WOOD

- M25 MOTORWAY

CROSSRAIL + C2E

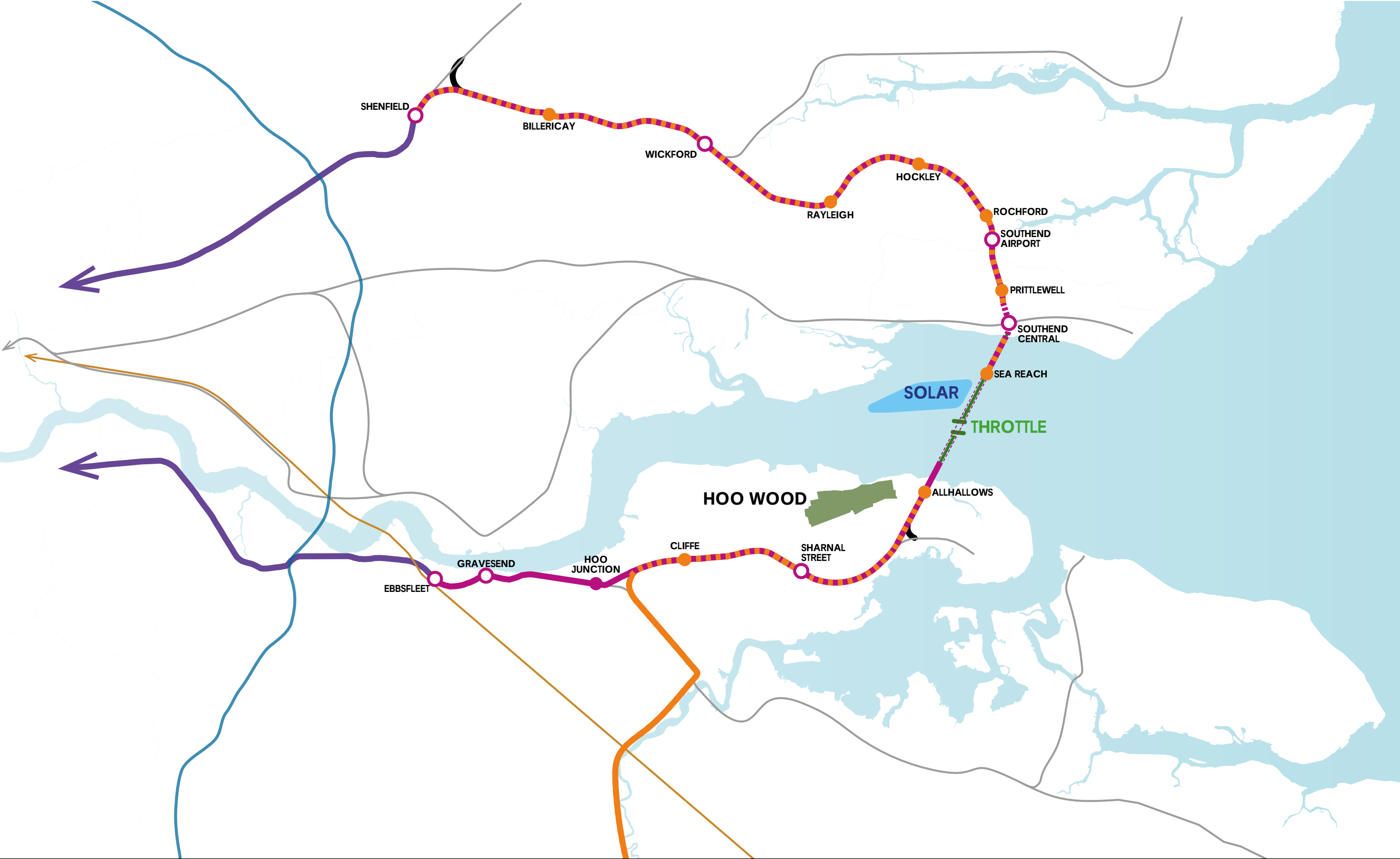
HS1

EXISTING RAIL LINES
- ORBITAL

TUNNEL

FLOATING SOLAR

SEA WALL



SUSTAINABLE LEISURE AND TOURISM

HOO PENINSULA ATTRACTIONS

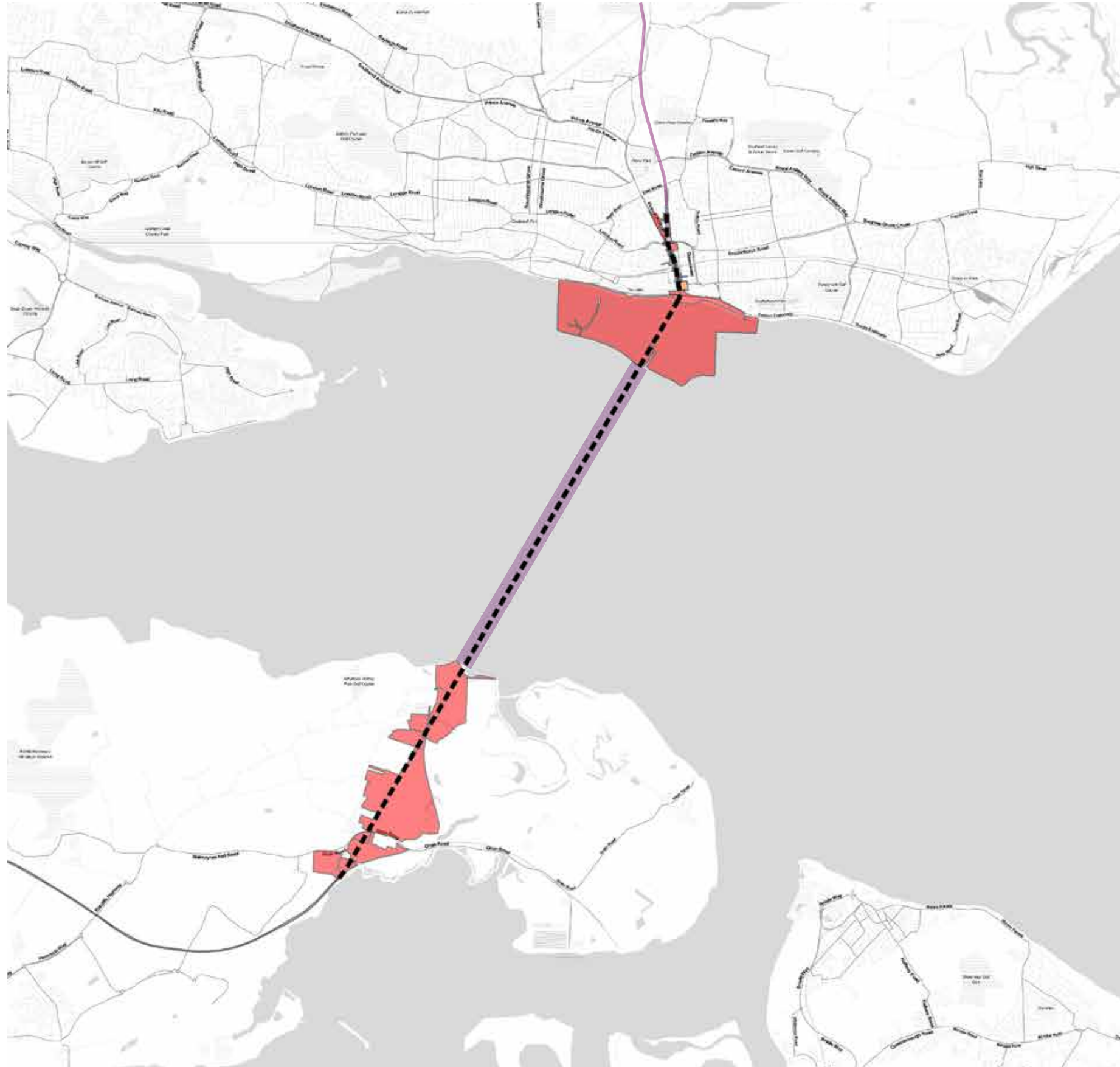
- LOWER THAMES ORBITAL
- GENERAL ATTRACTIONS
- PUBS
- CHURCHES
- PROPOSED HOO WOOD 5 SQ. KM



- | | | | | |
|--|--------------------------|--------------------------|------------------|--------------------------------------|
| 1 Grain Tower | 9 Hoo Wood | 1 Six Bells | 9 The Five Bells | 1 St. James, Grain |
| 2 Grain Seafront | 10 Cooling Castle Barn | 2 The Horseshoe & Castle | | 2 St. James, Cooling |
| 3 WW2 Defences: Ilse of Grain + Kingsnorth | 11 Slough Fort | 3 The Red Dog | | 3 All Saints, Allhallows |
| 4 London Stone | 12 Cliffe Fort | 4 Fenn Bell Inn | | 4 St. Peter & St. Pauls, Upper Stoke |
| 5 Allhallows Leisure Park | 13 Saxon Shore Way | 5 The Nags Head | | 5 St. Werburgh, Hoo St Werburgh |
| 6 Allhallows Yacht Club | 14 Great Chattendon Wood | 6 The British Pilot | | 6 St. Helens, Cliffe |
| 7 RSPB Northward Hill | | 7 The Hogarth Inn | | 7 St. Mary's, Higham |
| 8 RSPB Cliffe Pools | | 8 The Chequers | | |

ROUTE FREEHOLDS

- 35 NO. REGISTERED FREEHOLDS FOR THE RAIL ROUTE
- 103 NO. FREEHOLDS OF ADJACENT LAND ON SOUTHEND HIGH STREET
- CROWN ESTATE, PLA AND NETWORK RAIL EXISTING HOLDINGS



ROUTE OVERVIEW

1:100,000

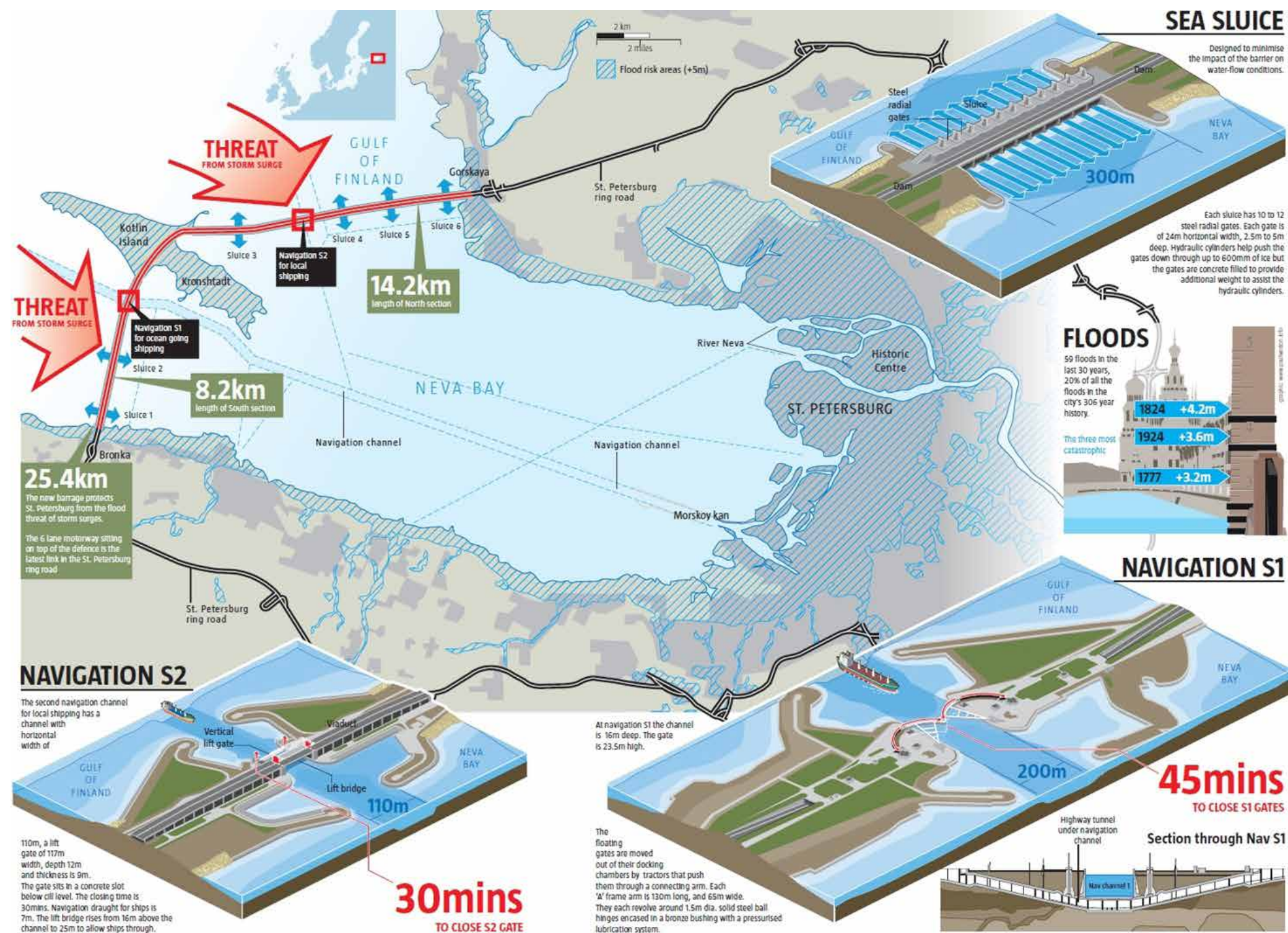


SOUTHEND DETAIL

1:10,000

ST PETERSBURG FLOOD BARRIER COMPARISON

ST PETERSBURG BARRIER – \$3.85BN USD (2011)

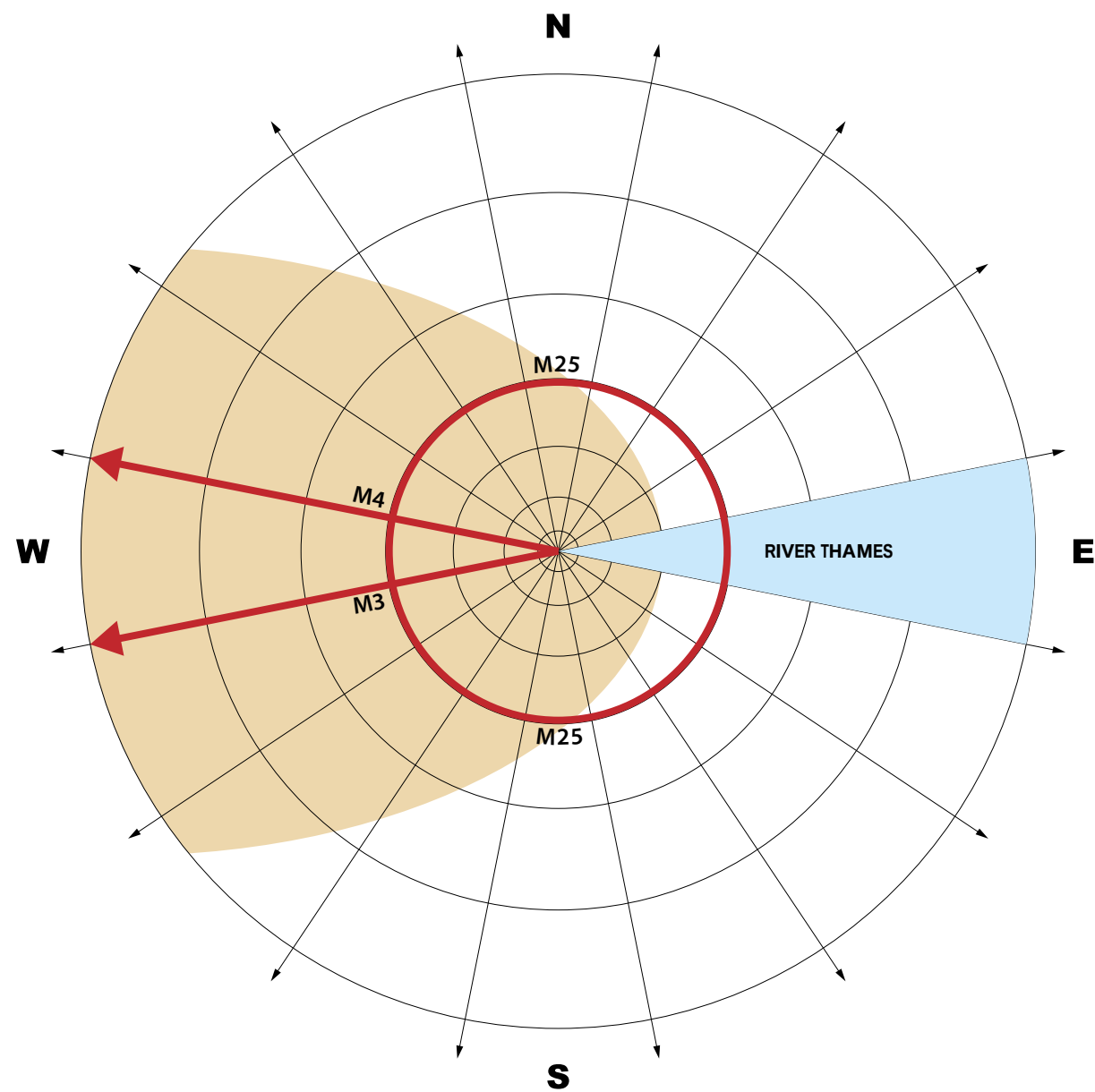


	ST PETERSBURG	METROTIDAL
LENGTH (KM)	25.4	13.2
WIDTH (M)	30+	15+
SHIPPING CHANNELS	2	1
20M TIDAL SLUICES	64	30

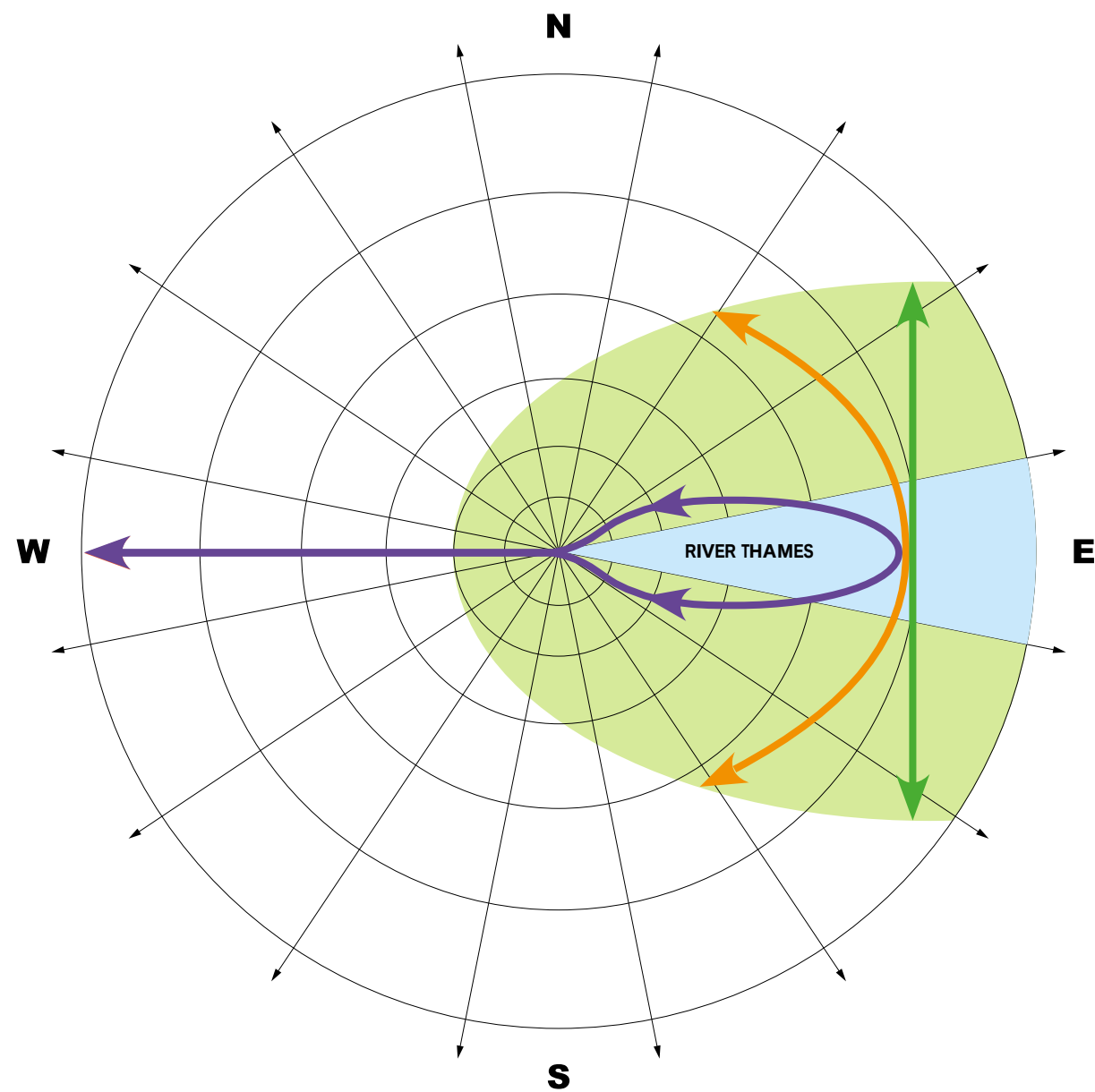
AGGLOMERATION BENEFITS

TRANSPORT NETWORKS AND GROWTH AREAS FOR LONDON + 100,000 HOMES

- CROSSRAIL ORBITAL EXPRESS
- ESSEX KENT ORBITAL
- CYCLING & FREIGHT CONNECTIONS



HISTORIC SYSTEM
GROWTH IN THE WEST



PROPOSED ADDITION
GROWTH IN THE EAST