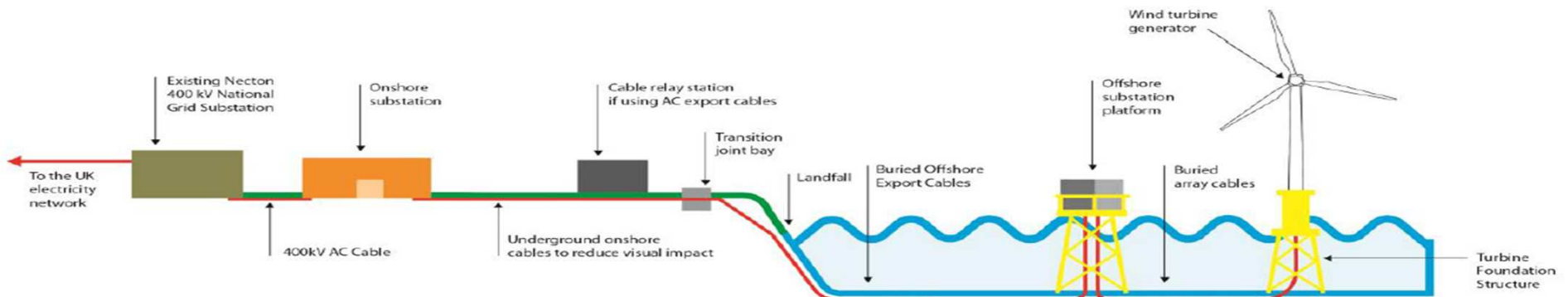
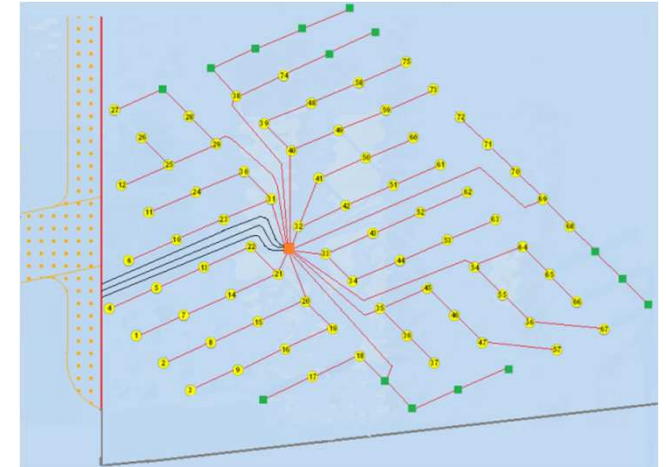


# Protection interests for the future

Andrew Kitimbo

# Vattenfall

- Electricity distribution  
→ Distribution grid
- Electricity generation  
- Wind generation – onshore + offshore  
→ submarine transmission cables, submarine array cable systems



# Distribution grid

- Decrease time to fault location
  - location of fault in the grid upon detection
- Microgrids, distributed generation and asynchronous generation
  - bi- directional power flow
  - reduced short circuit power from asynchronous sources
  - selectivity between grid and microgrid

# Wind Power

- Long transmission cables
  - fault location on cables
- Wind farm array systems
  - fault detection in branched array systems

Thank you