

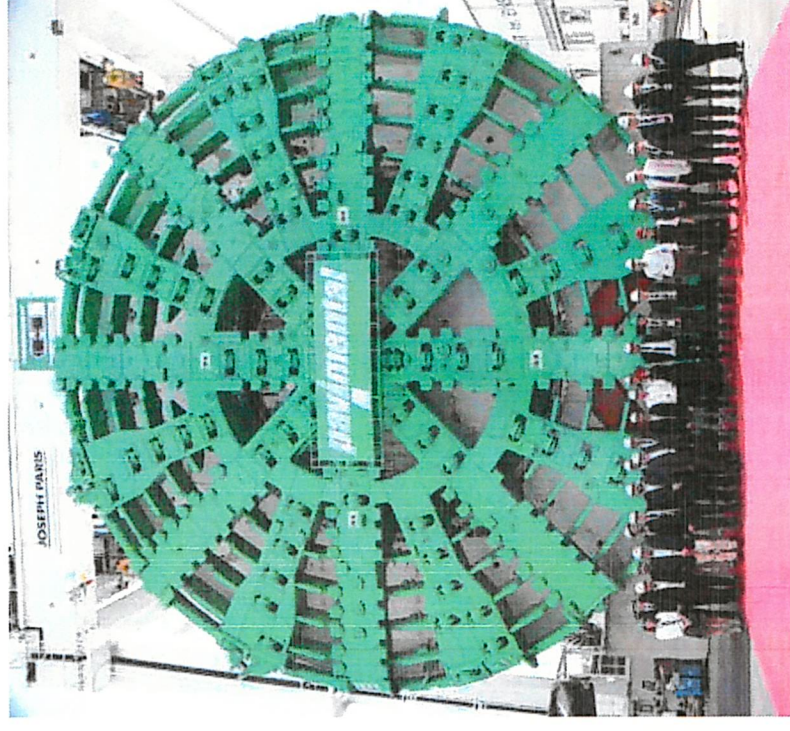


# Survey Update

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# Why do we need surveys?

- Surveys give us vital information to help develop and design our project.
- Surveys give us the base line data we need so we can understand the impacts on the area.
- Data and mitigation plans are a key requirement of the Development Consent Order (DCO)
- Environmental constraints in relation to potential impact of scheme on designated sites (RAMSAR) and other sensitive receptors.
- Very little existing detailed ground investigation information available.
- Challenging ground conditions with soft ground (Alluvium) overlying weak rock (Chalk)



# What Surveys do we need to undertake?

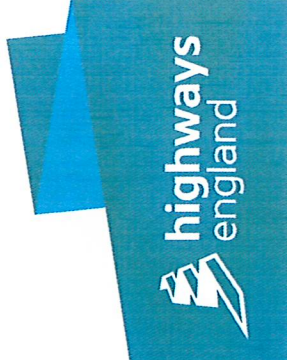
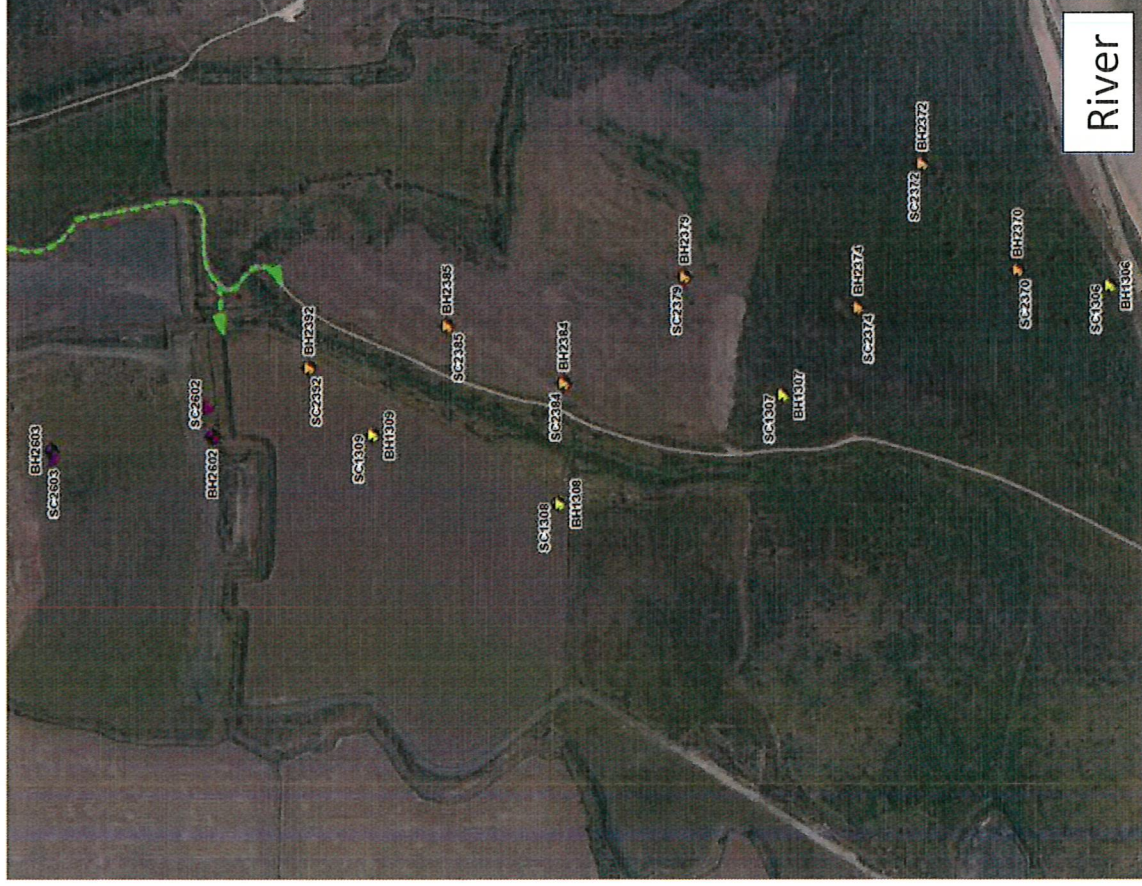
- We have a whole range of surveys-approx. 41 different types of surveys
- Environmental – including Air quality, Noise
- Ecological including Birds surveys, vegetation, bats, invertebrates & vegetation.
- Archeological, heritage and historic buildings
- Agricultural Land classification including soil sampling
- Rights of way Surveys
- Ground investigations

# What ground surveys are needed?

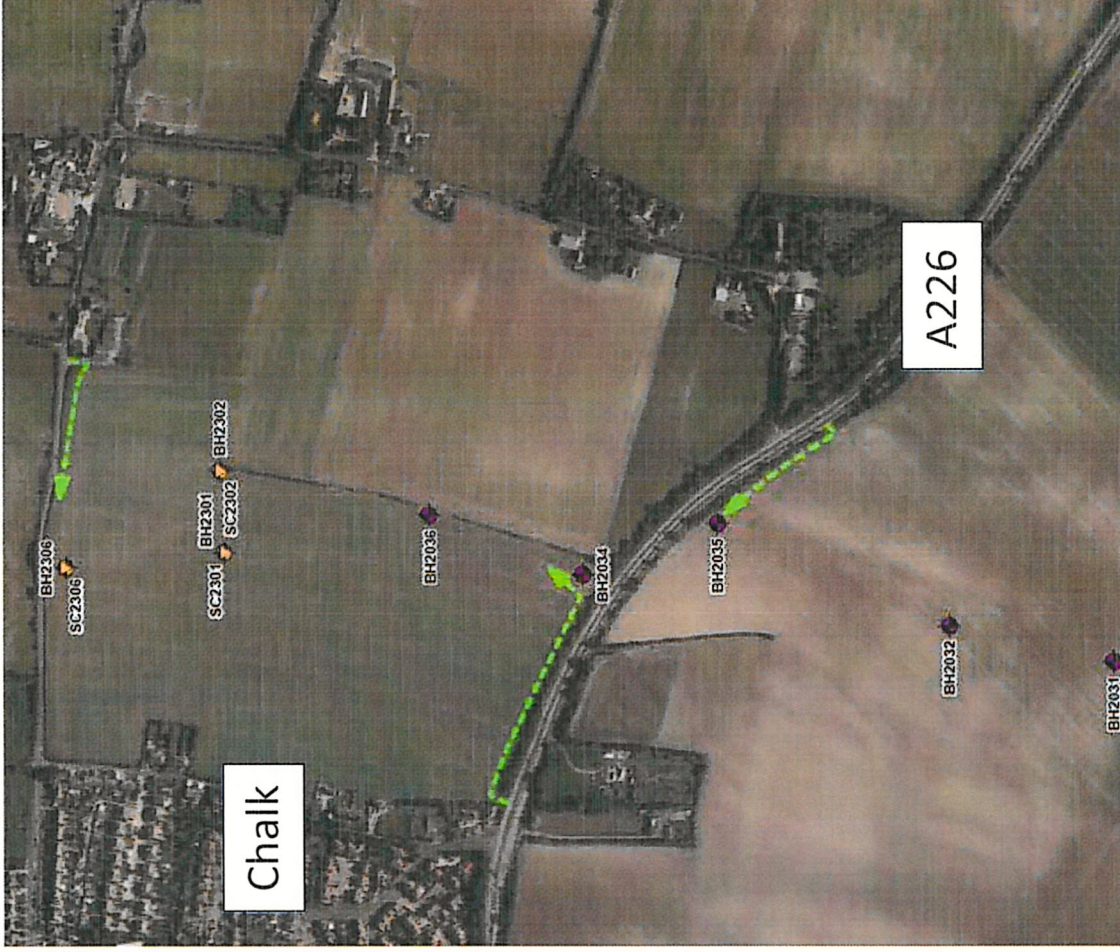
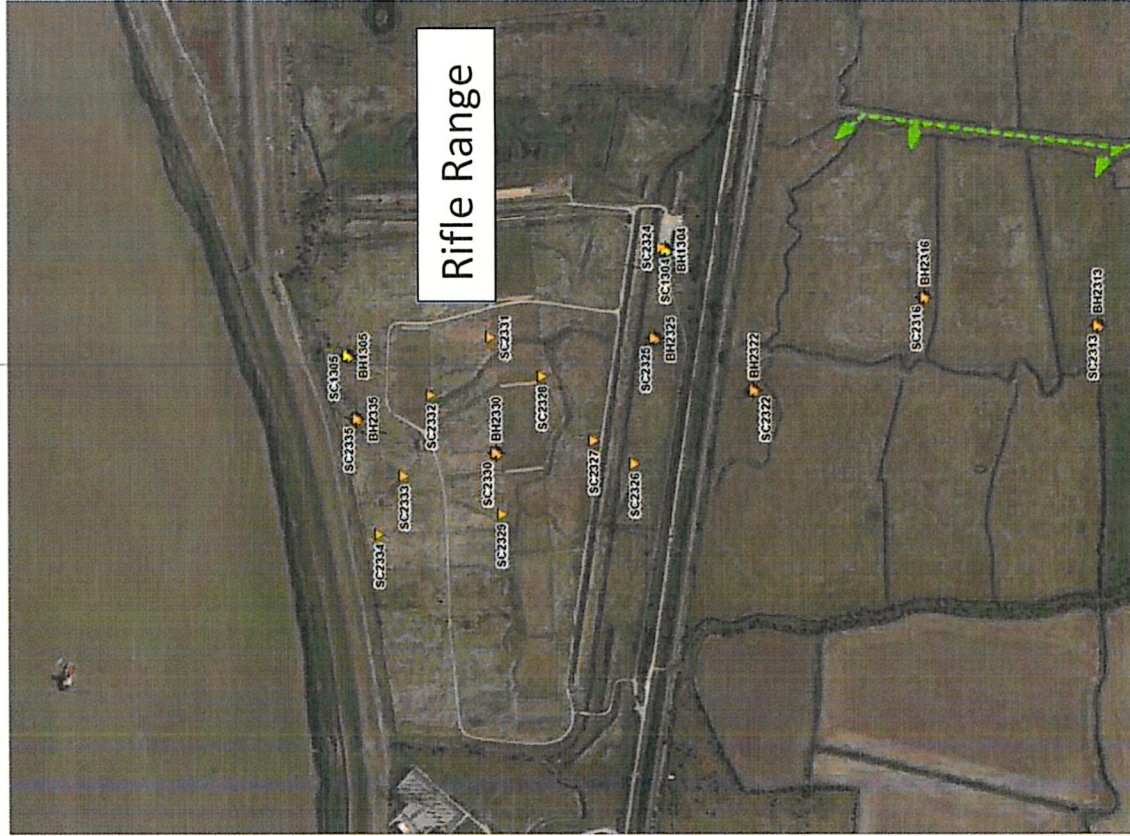
- Phased approach to investigations
- Geophysical and bathymetrical surveys in river and limited number of land based boreholes with geophysics along tunnel alignment to confirm stratigraphy
- Intrusive ground investigations with detailed in situ sampling and testing including cored boreholes extending to below the tunnel alignment horizon to assess detailed parameters
- Pump tests included in limited number of borehole wells to inform hydrogeological conditions



# Ground Investigations- Northern Portal



# Ground Investigations -Southern Portal



# How do we manage surveys?

- Surveys are ongoing and need to be planned
- Timings depend on a number of constraints
- We need to seek Landowner permission before accessing land and put arrangements in place
- We may need other consents to undertake works which will be in place before starting on site
- Ensure we minimise impact
- Compensation may be payable to landowners for any disturbance



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# QUESTIONS?