



- **The Humber and Tees environment is already under pressure and the changing climate is making this worse.** Existing habitat protection designations, water quality and quantity concerns are already challenging environmental permit provision in some locations. Currently water availability is the key challenge in Humber, whereas in Tees the key challenge is currently water quality.
- **Industry must engage and collaborate early at a cluster-scale to understand the environment in which they will operate and find innovative solutions to capacity challenges.** This will avoid delays to deployment and include reducing the demand for water, addressing residual emissions that may impact the environment, to ensure net zero growth is sustainable growth.
- **Hydrogen and carbon capture technology have the potential to impact the environment leading to delays in authorisation and deployment.** Water availability, water quality, air quality and flood risk are likely to challenge the deployment of hydrogen and CCUS technology in specific industrial clusters.

For full report contact:  
[enablingnetzero@environment-agency.gov.uk](mailto:enablingnetzero@environment-agency.gov.uk)

Future review of the environmental capacity for Tees and Hynet will be added to these messages.

**Enabling the transition to net zero.** Industry needs and environmental context of low and zero carbon technology in the Humber Industrial Cluster



## WATER ENVIRONMENT

- Water is already under pressure, the **changing climate increases risks.**
- **Additional 170% water per day is needed** to decarbonise industry, not available in south Humber.
- **Significant additional industrial effluent** is expected.
- **60-80% predicted decrease in river flows** will affect water quality.
- **4°C predicted increase in river temperature** will affect water abstractions.

## FLOOD RISK

- 75% of industry is **currently at risk of flooding**
- **Flood risk will increase with climate change**, impacts will be more severe.
- Industry must **ensure projects are resilient** to current and future flood risk.
- Remediating land for development **can improve water quality and flood risk management** .

## AIR QUALITY

- Nitrogen nutrient deposition from **reduced air quality is already impacting designated habitats.**
- Unmitigated development risks **worsening local impacts** including further habitat degradation.
- Pollutants that will be the main challenge to developments are **nitrous oxides (NOX), ammonia and PM10** alongside current ambient levels.
- Work is needed to **understand ambient levels, proprietary solvents and their by-products.** Early disclosure from industry is crucial.

**Enabling the transition to net zero:** Industry needs and environmental context of low and zero carbon technology in the Teesside industrial cluster



## WATER QUALITY

---

- Existing water quality concerns could challenge permitting **additional discharges** in a changing climate.
- Current **habitat designations could affect** development.
- 60-80% **future decrease in river flows** will challenge water quality and development.
- **Development could remediate historic contamination** but must avoid mobilising contaminants.
- **Additional treatment will need to be installed** to meet stricter nitrogen nutrient loading limits.

## WATER AVAILABILITY

---

- The Tees has reliable abstraction **50 to 70%** of the time
- **Forecast 80% increase** in water demand for the power sector by 2050, compared to today is possible.
- **Groundwater availability may be affected** in a changing climate due to significant reduction in summer recharge rates.
- There will be a need for reinvestment in **water transfer infrastructure**
- Industry must **share realistic estimates** of their water needs.

## AIR QUALITY AND FLOOD RISK

---

Air quality and flood risk will be considered in future phases of this project.