



## GO: Morecambe Bay

Using Design and Technology to Increase Outdoor Learning and Engagement with Walney Island's Nature and Regeneration

### Alternative Provision – Year 7-11

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## Specialist knowledge for teachers

We have sought to embody the following Sustainable Design knowledge and practice in a bespoke nature trail activity – GO: Morecambe Bay. It allows learners to navigate Walney Island's northern peninsula whilst engaging with the area's ecology through new technology. Walney Island has recently being added to the English Heritage site for Coastal Route walks and the area includes two new nature reserves and several diverse beaches. It is home to a breeding colony of grey seals, is a nesting spot for eider ducks, oyster catchers and various gulls, and provides the conditions for the rare Walney Geranium to grow. By following the trail and engaging in a range of tasks along the way, pupils will develop knowledge related to the history, geography and biodiverse species in their local area.

### Playful Engagement and Experiential Learning

GO: Morecambe Bay is a phygital (physical-digital) activity which uses simple yet exciting Augmented Reality (AR) technology. This enables learners to creatively and critically interact with the natural and human-made geography, ecology and climate of Walney Island and surrounding Barrow area. AR is a technology that overlays digital information – such as 3D objects, images, videos or data – onto the real-world environment in real-time, typically viewed through smartphones or tablets.

The playful activity is anchored around a nature trail which consists of a series of fun badge challenges that reflect different sustainability themes in relation to Walney's natural ecosystem. Seven ArUco markers are installed around Walney Island.

After downloading a free smart mobile phone/tablet app called Halo AR, learners can journey around Walney and use the app to scan each of the ArUco markers. By doing so, they will trigger interactive AR

scenes and tasks the learners must complete to attain all the badges.

Research shows that playful game-like activities such as **GO: Morecambe Bay** can provide new spaces for young people to practice alternative forms of sustainable living, as well as re-evaluate their environmental assumptions and concerns:

- **GO: Morecambe Bay** focusses on local histories and celebrations of place. This helps to make local environmental issues become less abstract, more real and feasible.
- **GO: Morecambe Bay** does not preach on sustainable issues. Engaging learners in the badge challenges makes responding to unsustainability a fun but also strategic act.
- **GO: Morecambe Bay** gets learners outdoors and tangibly immersed in Walney's ecology and geography. This enables students to directly experience place and envision better futures for local real-world issues.

### Regenerative Sustainability Knowledge for Educators

Crucially, GO: Morecambe Bay's experiential, tacit learning format allows students to better understand the deeply co-dependant relationship between human and non-human stakeholders in sustaining a positive future for the area. Here, the activity builds upon specialist knowledge and research related to Sustainable Regenerative Design, particularly More-than-Human thinking which aims to proactively consider non-humans (e.g., flora, fauna, climate and technology) as part of design processes. GO: Morecambe Bay similarly draws upon Regenerative Design approaches that expand the power of design beyond only problem-solving and into a frame for imagining different sustainable futures.



# Curriculum aims and objectives

The GO: Morecambe Bay resources allow learners to explore Walney's natural environment with the intention of giving them a new outlook on the local area, its geography and ecology.

## Age Group

Our GO: Morecambe Bay resources have been specifically co-created to appeal, in the first instance, to learners in Morecambe-based Alternate Provision-based teaching and learning environments. These learners are often aged between 11-16 years old.

Given the fun and practical nature of the resources, we believe they will also likely engage a much broader range of learners visiting Walney and therefore be of use to teachers, parents and guardians in wider teaching contexts.

## Key Stage Alignment

The resources we have provided connect to both Key Stage 3: Ages 11-14 (Years 7-9), and Key Stage 4: Ages 14-16 (Years 10-11).

The resource is cross-curricular and participating in the trail develops knowledge across the following subjects:

- **Geography:** explore the interaction between physical and human processes; understand coastal erosion and landform change.
- **History:** inspire curiosity about the past; understand connections between local, regional, national and international history.
- **Biology:** understand interdependence in ecosystems and the importance of biodiversity.

Additionally, after participating, students have the chance to design their own trails, addressing the following aims:

- **Design and Technology:** use their own knowledge and skills to design and make high quality prototypes and products; critique, evaluate and test their own and others' ideas; develop the creative, technical and practical expertise needed to participate successfully in an increasingly technological world.

## Learning Outcomes

The combination of the GO: Morecambe Bay AR nature trail activity and classroom teaching materials will support students' learning and development through five key Learning Outcomes:

- **Knowledge-foraging:** learners will discover more about Walney's unique biome.
- **Creativity:** learners will use their imagination to envisage positive sustainable development for Walney.
- **Playful problem-solving:** learners will engage in the badge challenges that thematically reflect different elements of Walney's human/non-human ecosystem.
- **Independence and Teamwork:** learners can complete the nature trail individually or in collaboration with their classmates/friends.
- **Resilience:** learners must engage and display tenacity to attain the five badges and final trophy.

## Embodying Head, Heart and Hands

GO: Morecambe Bay combines the knowledge and values focussed learning of the 'Head' and 'Heart' approaches, alongside the practical 'Hands' dimension through the interactive AR nature trail activity and its badge challenges. In doing so, the activity and resources effectively represent key themes underpinning the Morecambe Bay Curriculum.

### Head

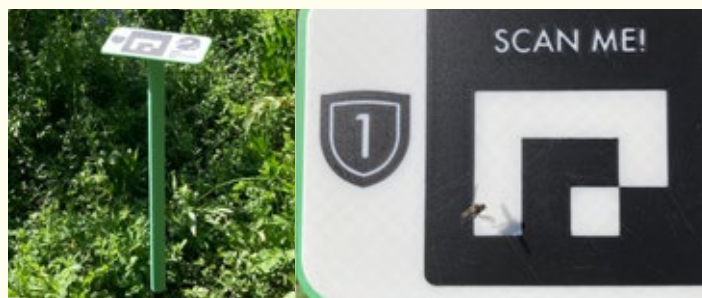
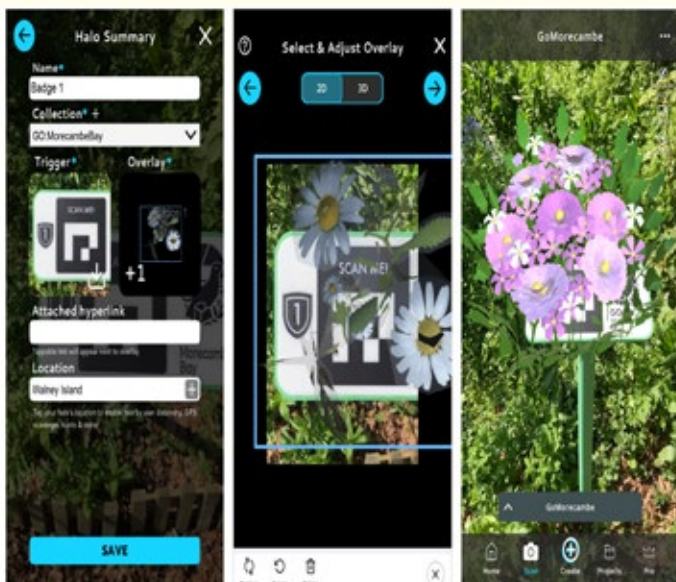
Weaving together notions of sustainability, place, and positivity, the learning activities/resources engage and challenge learners on an intellectual level by fostering critical thinking, curiosity and creative skills, all in the context of Walney Island's unique biome.

### Heart

By encouraging learners to get outdoors and engage more proactively with the geography and ecology of Walney, they will build a deeper personal, emotional connection with the island's nature and natural surroundings.

### Hands

Applying new and exciting technology, our approach empowers learners to complete fun, hands-on, practical learning task while immersed in the local environment.



# Examples in practice

## GO: Morecambe Bay Augmented Reality Nature Trail Activity

The following text provides an overview of the GO: Morecambe Bay AR nature trail activity and how it promotes outdoor learning and engagement with Walney Island's Nature and Ecology using creative technologies.

The 5km nature trail activity takes around 2-hours to complete.

### Start: Thorney Nook Car Park

- Location – Thorney Nook Car Park
- Unlocked by – Downloading the Halo AR app and scanning the Start ArUco code.
- AR Interaction – Trigger the first AR scene – a orchid.
- AR Task – The student(s) must read the trail activity guidance.
- What it represents (connection to Learning Outcomes) – playful problem-solving as students learn to use the AR app to trigger interactions and tasks.

### Badge 1: History

- Location – Thorney Nook Car Park
- Unlocked by – Completing the Walney Time Machine Challenge.
- AR Interaction – Scan Badge 1's ArUco code to trigger a historical AR scene – a warship.
- AR Task – The student(s) must watch a short video about Barrow's shipbuilding history.
- What it represents (connection to Learning Outcomes) – Knowledge of Walney's cultural, industrial, and military past and present.

### Badge 2: Beach

- Location – Biggar Bank, Roundhouse Hub
- Unlocked by – Completing the Beach Clean Challenge.
- AR Interaction – Scan Badge 2's ArUco code to trigger its AR scene – a piece of beach litter.
- AR Task – The student(s) must find real-world beach litter and record how many pieces they collected.
- What it represents – Commitment to caring for the bay and understanding the environmental impact of coastal waste.

### Badge 4: Coast

- Location – Earnse Bay
- Unlocked by – Completing the Erosion Explorer Challenge.
- AR Interaction – Scan Badge 4's ArUco code to trigger its AR scene – a seashell.
- AR Task – The student(s) must correctly identify one-way coastal erosion can impact wildlife, plant life and/or the landscape.
- What it represents (connection to Learning Outcomes) – Understanding of coastal geography, erosion processes, and landform change.

### Badge 3: Tides

- Location – Sandy Gap
- Unlocked by – Completing the Tide & Safety Awareness Challenge.
- AR Interaction – Scan Badge 3's ArUco code to trigger its AR scene – an ocean tide.
- AR Task – The student(s) must correctly identify: the current tide state and one potential safety risk at this location.
- What it represents (connection to Learning Outcomes) – Understanding of how tides shape Walney's beaches and habitats and ocean safety.

### Badge 5: Biodiversity

- Location – North Walney Nature Reserve
- Unlocked by – Completing the Biodiversity Snapshot Challenge.
- AR Interaction – Scan Badge 2's ArUco code to trigger its AR scene – a seal.
- AR Task – The student(s) must find and identify local species – seals, eider ducks, orchids, and wading birds.
- What it represents (connection to Learning Outcomes) – Awareness of sensitive habitats on Walney, especially around North Walney Nature Reserve.

### Trophy 6: GO: Morecambe Bay!

- Location – On return to Thorney Nook Car Park
- Unlocked by – Completing all AR interactions and tasks
- AR Interaction – Scan Trophy 6's ArUco code to trigger its AR scene – a trophy.
- AR Task – The student(s) must find guesstimate the length of the entire trail (5km).
- What it represents (connection to Learning Outcomes) – Mastery of the trail, commitment to outdoor learning, and understanding Walney's unique geography and ecology.

## Adaptations to extend impact

While the GO: Morecambe Bay AR nature trail activity and associated resources have been specifically developed to engage learners with Walney's geography and ecology, the approach and technology is transferable to alternative outdoor learning locations throughout the Bay. Pupils and teachers can plan, design and create their own versions of the trail by generating their own ArUcos. These are easy to make and are simpler than QR codes, comprising simple 4x3 block patterns. Instructions on how to do this can be found with the additional resources on the MBC website.

Educators, parents and guardians can easily adapt the activity to meet the requirements of their bespoke teaching context, by devising new trails based around local points of interest. They can also adapt tasks to their learners' creative pedagogic needs. The activities and Learning Outcomes can similarly be adapted to suit different age groups, Key Stages and educational settings.

