

# BE THE WAVE AR FRIG Y DON

## Source To Sea

Lesson Plan



cadwch keep  
gymru'n wales  
daclus tidi

**MARINE  
CONSERVATION  
SOCIETY**



UNDEB EWROPEAIDD  
EUROPEAN UNION



Llywodraeth Cymru  
Welsh Government

**Cronfeydd Strwythurol a  
Buddosoddi Ewropeaidd**

**European Structural  
and Investment Funds**



Ariennir gan  
**Lywodraeth Cymru**  
Funded by  
**Welsh Government**





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| <b>Aims</b>   |
| <ul style="list-style-type: none"> <li>• Pupils will understand the various pathways litter can take to reach the coastline and the ocean.</li> <li>• Raise awareness of issues concerning marine litter and to encourage students to act constructively to make a real difference.</li> </ul>  |
| <b>Objectives</b>   |
| <ul style="list-style-type: none"> <li>• Explain the routes litter can take to enter the ocean</li> <li>• Explore the common types of litter that end up in the ocean.</li> <li>• Develop an understanding of the impact litter has on the marine environment.</li> <li>• Apply knowledge of marine litter sources to everyday life through #BeTheWave actions and the Eco-Schools programme</li> </ul> |

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| <b>Eco-Schools Topic</b>  | <b>Global Goals</b>  |
| <ul style="list-style-type: none"> <li>• Litter</li> <li>• Waste Minimisation</li> <li>• Water</li> </ul> | <ul style="list-style-type: none"> <li>• 12 Responsible Consumption</li> <li>• 13 Climate Change</li> <li>• 14 Life Below Water</li> </ul> |

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| <b>Links to the Curriculum for Wales</b>   |                                |
| <b>Purpose</b>   |                                |
| <p>Ambitious, capable learners who:</p> <ul style="list-style-type: none"> <li>• Can use number effectively in different contexts</li> </ul> <p>Ethical, informed citizens who:</p> <ul style="list-style-type: none"> <li>• Engage in contemporary issues, understand, and consider their actions when making choices and acting</li> <li>• Show their commitment to the sustainability of the planet</li> </ul>  |                                |
| <b>What Matters Descriptions of Learning</b>   | <b>Progression Step: Four</b>  |
| <p>Humanities</p> <ul style="list-style-type: none"> <li>• Describe and explain spatial patterns of places, environments and landforms may change overtime in my locality and in Wales, as well as the wider world.</li> <li>• Have an understanding of my own and others environmental, economic and social responsibilities in creating a sustainable future</li> </ul> <p>Maths and Numeracy</p> <ul style="list-style-type: none"> <li>• Make informed choices about how to organise and represent data, using a wide range of graphs and charts, including pie charts, frequency diagrams</li> <li>• Use data to draw conclusions about hypotheses and I have communicated my findings clearly.</li> </ul> <p>Science and Technology</p> <ul style="list-style-type: none"> <li>• Explain how the impact of our actions contribute to the changes in the environment and biodiversity.</li> </ul> |                                |
| <b>DCF</b>   | <b>Progression Step: Three</b> |
| <p>Data and information literacy</p> <ul style="list-style-type: none"> <li>• Construct, refine and interrogate data sets within tables, charts, spreadsheets and databases to test or support an investigation.</li> </ul>  |                                |



| LNF  | Progression Step: Three/Four |
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| <p>Listening to understand</p> <ul style="list-style-type: none"> <li>Listen to gain different people's views and ideas on various subjects, using them to arrive at my own conclusions.</li> <li>Listen to and consider the relevance and significance of information and ideas presented to me.</li> </ul> <p>Representing data</p> <ul style="list-style-type: none"> <li>Select and construct appropriate charts, diagrams and graphs with suitable scales.</li> <li>Represent data using:               <ul style="list-style-type: none"> <li>lists, tally charts, tables, diagrams and frequency tables</li> <li>bar charts, grouped data charts, line graphs and conversion graphs</li> <li>pictograms where one symbol represents more than one unit using a key</li> <li>Venn and Carroll diagrams.</li> </ul> </li> </ul> |                              |
| <p><b>Cynefin</b></p>  |                              |
| <p>Students are investigating their local community including location of waterways and may wish to consider land uses in their locality.<br/>Impact of litter in rivers in the BBC clip is set in Cardiff</p>   |                              |


| Activity One  | Resources and Equipment  |
|---|--|
| <p><b>How does litter get into the ocean?</b></p> <p>Discuss in what ways do you think litter can end up in our ocean?<br/>Collate the responses and create a list visible to the class. Show the following clip (2:02)<br/><a href="#">TRASH TALK: Where does marine debris come from?   Ocean Today (noaa.gov)</a></p> <p>After watching, revisit the list, are any changes required? Look at the infographic and the Source to Sea factsheet below - have you included all of the routes in your list?</p> <p>Discuss in pairs/groups ideas of ways to reduce litter entering the pathways. Feedback to the class and vote for the top 3 ideas – how can be these be implemented in school? Who do you need to speak to? Could you involve the Headteacher or Eco-Committee?</p> | <p>Video link in Presentation</p> <p>Infographic in Presentation<br/>Factsheet</p> |

| Activity Two   | Resources and Equipment      |
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| <p><b>Investigating Litter</b></p> <p>Watch the spoof video (3:59) of a plastic bag on its way to the ocean. <a href="#">The Majestic Plastic Bag - A Mockumentary - YouTube</a> and discuss.<br/>Ask the questions:</p> | <p>Video in Presentation</p> |



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| <p>Do we think we have a litter issue in and around our school? Can litter from our school reach the ocean?</p> <p>Think about the school grounds and boundaries.<br/>Ask and record the answers to the questions:<br/>What are the common items found littered?<br/>Are there hot spot areas where more litter accumulates?<br/>Who do the pupils think are responsible for the litter?<br/>Complete a litter Investigation sheet (below)<br/>What are the common items found? Are there hot spot areas where more litter accumulates? Who do the pupils think are responsible for these areas? Students display data in graphs or pie charts.</p> <p>Explore where the nearest stream/river/coastline is to your school and consider how the items found in and around your school could enter the waterways. Think about the pathways litter can take to enter the ocean. Don't forget the drains! Students need to explicitly make the links between the litter dropped on land and the pathways it takes to get to the ocean.</p> | <p>Questions in Presentation</p> <p>Litter survey Worksheet<br/>Graph paper/ICT</p> <p>Maps of the local area</p> |
|--|---|

| Activity Three  | Resources and Equipment            |
|---|------------------------------------|
| <p><b>Source to Sea – Local and Global</b></p> <p>Watch the video (5:17) <a href="#">“The World’s Dirtiest River”</a> which shows the pollution of the Citarum river in West Java, we have problems here in Wales too! Watch the video (2:33) report <a href="#">-Flooding after Storm Dennis: Trail of river litter left behind</a><br/>Ask pupils to write down their thoughts and feelings as they watch both films<br/>Discuss with pupils how the information made them feel and ask everybody to share their opinions. Get pupils to discuss where they have seen litter affecting water in their communities or on holiday etc</p> | <p>Video links in Presentation</p> |

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| <p> #BeTheWave</p>   |
| <p>Apply the knowledge gathered in the lesson into action as ethical and informed citizens. It is an important aspect to ensure students know they have the power to enact and make changes within their own lives and within the school. It is also a positive step which helps to balance some of the negative impacts explored within the lesson.</p> <p>Decide on an action/actions to take forward either as individuals or as a class, these are some suggestions, or the class could generate their own.</p> |
| <p>School:</p> <ul style="list-style-type: none"> <li>• Use the <b>Eco-Schools Litter Environmental Review</b> to investigate litter issues in your school and community.</li> </ul>  |



- Through your school communication channels make sure everybody is educated about the pathways litter can take to get to the ocean. Collect evidence of school related litter and highlight its dangers.
- Make sure your school has a **litter policy** and the content known by the school community.

- Individual:
- Never drop litter! Make sure any litter you throw away is safe and secure and can't escape or be blown away.
  - Pledge your support to an established campaign. Check out the [City to Sea](#) campaigns or take a look at the **Marine Conservation Society** "[Don't Let Go](#)". Balloon campaign.
  - Join in with official litter picking events such as **Spring/Autumn Clean Cymru with [Keep WalesTidy](#)** or investigate local litter picking groups and support them! If you can't find a group, create one!

| Alternative Activities  | Resources and Equipment |
|---|-------------------------|
| <p>Create an infographic showing the journey your litter could take and make sure you make it visible to the school community. Look at the <a href="#">Journey of Litter poster</a> produced by Carmarthenshire Council for ideas.</p> <p>Invite representatives from a variety of backgrounds to share their ideas and experience with pupils. Invitations could be sent to local councillors, the waste management department of the local council, local environmental groups, local businesses, environmental charities or Eco Committees from another schools.</p> <p>Create a piece of art or a sculpture from the litter found in your school grounds. Create a message and hashtag for it and share on social media.</p> <p>Create a litter poem, story, play or video (3:06). Take a look at <a href="#">the Steve Backshall video - Jemima Glitter and the Voyage of Bob the Bottle as a start for inspiration.</a></p> | <p>Litter poster</p>    |



## Source to Sea Fact Sheet

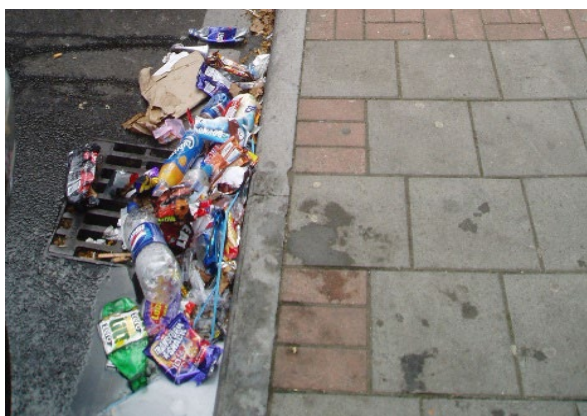
### How does Litter enter or oceans?

Any waste material improperly disposed of, as well as any material improperly transported or stored has the potential to become marine litter.

It has been estimated that around **80%** of marine debris is from land-based sources and the remaining **20%** is from ocean-based sources.

### Marine litter comes mainly from land-based practices, such as:

- **Improper waste disposal** from homes, at the workplace, on the streets or through illegal dumping. Litter dropped on the streets or placed in a rubbish bin does not always get collected and disposed of correctly. Rainwater can often move litter towards and down into the street drains and wind can blow our litter around, both actions can result in litter entering our rivers and streams and into the ocean.







- **Leakage from waste management systems** such as collection, transportation, treatment and in final disposal. Litter from landfill sites can find its way into the ocean, especially if the sites are near rivers or the coastline.



<https://metro.co.uk/2019/11/06/landfill-site-starts-leaking-plastic-thames-11050538/>



- **Poorly managed industrial waste** which may contain for example, scrap from the production process, packaging or raw material, plastic resin pellets, as well as untreated wastewater.
- **Sewage related debris** that ends up down our drains. Many of the products we use daily are flushed down toilets, including wet wipes, cotton buds and sanitary products.
- **Tourism and recreational activities** that take place on the beach or around the coastline. People can create and leave litter such as cigarette butts, plastic bags and food packaging. Litter can also result from poor management of coastal waste, for example, overflowing bins where litter can easily be blown into the water.







**Remember:**

**Microbeads and microfibers** from personal care and cleaning products can be washed down the sink, shower or bath outlets and microfibers are released into waterways when we wash our clothes in the washing machine, being too small to be filtered out by waste-water plants.

**Sea-based** activities can also be significant sources of marine litter such as:

- **Commercial fishing** - fishing-related waste such as fishing gear and nets.



- **Merchant and leisure shipping** – including large cargo ships, cruise liners, ferries – waste includes sewage related and lost cargo containers.







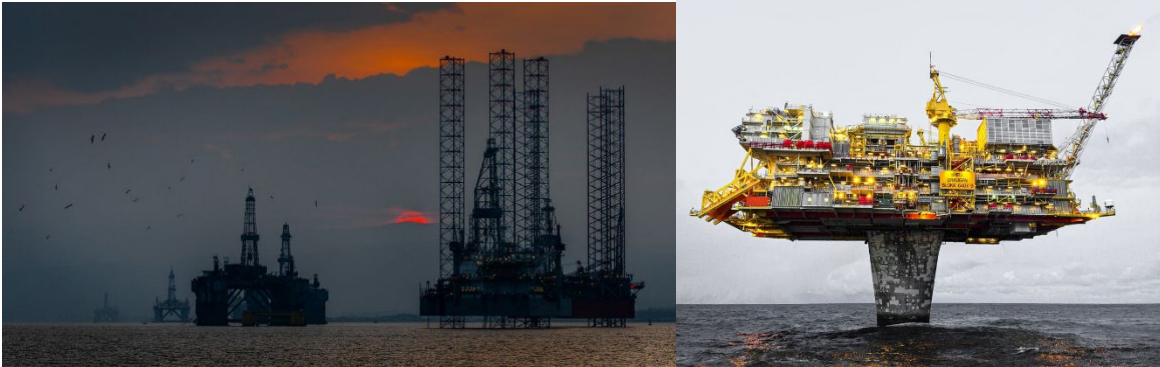
- **Recreational shipping** including small boats used for fishing, yachting and water sports. Waste related items here include bottles and tins, sewage, fishing and sports gear.







- **Offshore oil and gas platforms** that dispose of drilling equipment, pipes, storage drums, packaging items.



- **Aquaculture** industries waste includes net cages, construction materials and feed sacks.



- **Vessel Litter** produced on board vessels can often end up in the sea. Poor management facilities on ships, in ports and marinas worsen the problem.

**Remember Natural disasters**, such as hurricanes and tsunami, can be a cause for marine debris. Flooding can increase litter going into our oceans and storms can cause ships to sink or loose cargo overboard.

# Litter Investigation Sheet

Investigate and count the types of litter in and around your school grounds. Insert your findings below.

| Litter Item           | Number |
|-----------------------|--------|
| Plastic drinks bottle |        |
| Bottle cap / lid      |        |
| Food wrappers         |        |
| Chewing gum           |        |
| Drinks can            |        |
| Sweet wrapper         |        |
| Crisp packet          |        |
| Tin foil              |        |
| Drinking straw        |        |
| Paper                 |        |
| Small plastic pieces  |        |
| Plastic bag           |        |
| Disposable face mask  |        |
| Glass items           |        |
| Cigarette butts       |        |
| Other                 |        |
|                       |        |
|                       |        |

Where are the main problem areas for litter in and around your school?

Where do you think the litter in your school comes from? Who or what is responsible?

Highlight some actions that could reduce litter in your school grounds and outside in the community.





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