



BIODIVERSITY INDICATORS

USE OF BIODIVERSITY INDICATORS: AT COMPANY AND SITE LEVEL

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Biodiversity indicators - company level and site level

- A formalised measure to monitor the effects/impacts of a company's operations on biodiversity.
- Demonstrates how the company has considered and approaches biodiversity and ecosystem services (BES).
- **Biodiversity indicators application:**
 - Greater understanding of the impact on biodiversity and helps to communicate internally.
 - A measurement tool which is relevant to the business and BES using a risk based approach.
 - Assists with external communications with stakeholders by providing a common basis.

Biodiversity indicators demonstrate performance – company level

- **Shell made the following four commitments in 2003:**
 - We will not explore for, or develop, oil and gas resources in natural World Heritage Sites;
 - We will further improve the way we operate in International Union for Conservation of Nature (IUCN) Category I-IV protected areas, and areas of high biodiversity value;
 - We will publicly report on our activities in IUCN Categories I-IV; and
 - We will work with IUCN and others to help safeguard protected areas.
- Shell has biodiversity action plans for operations Gabon, Iraq, Ireland, the Netherlands and the USA.
 - We also work, in several countries, with our partners in joint ventures we do not operate to develop biodiversity action plans

Biodiversity indicators: company level reporting

- Commitment to “publicly report on our activities in IUCN Categories I-IV”.
- This information is available via the link below:
 - www.shell.com/global/environment-society/environment/biodiversity/protected-areas
- **Data source:**
 - Internal information on location of assets and Shell owned infrastructure
 - WCMC-WDPA -World Database of Protected Areas data on IUCN Categories I-IV protected areas.
 - Shell GIS team mapped the data sets and identify the overlaps with protected areas.
 - Follow up is undertaken with local teams to verify the data and information.

Biodiversity indicators - site level indicators

- **Site level indicators:**
 - Recognise the local biodiversity value of a specific area/ impacted location.
 - Assess the impact on biodiversity from the project/asset operation.
 - Establish baseline monitoring for specific defined parameters for the appropriate biodiversity component e.g. species/habitat impact.
- **Summary of indicator development:**
 - Determine biodiversity value of a location/habitat and establish biodiversity baseline information.
 - Identify the potential impacts on biodiversity and develop appropriate mitigations to manage the impacts.
 - Choose the site level biodiversity indicators to quantify/qualify the impact.
 - Monitor the indicators and report performance.
- **Review and update monitoring and action where necessary.**

Case study: Corrib Gas Development Ireland

- Offshore wells & subsea facilities, offshore pipeline 80km, onshore pipeline – Including Tunnel 4km, & Gas Processing Plant Onshore.

Ecological Footprints:

- Habitats that had the potential to be returned/ reinstated to functioning ecosystems status were identified.

Biodiversity Objectives:

- Habitats being impacted need to be reinstated to a functioning ecosystem.
- Reinstated habitats must reflect pre-existing habitat and the ecological landscape in which they occur.
- Biodiversity action plan for Corrib developed 2014-2019



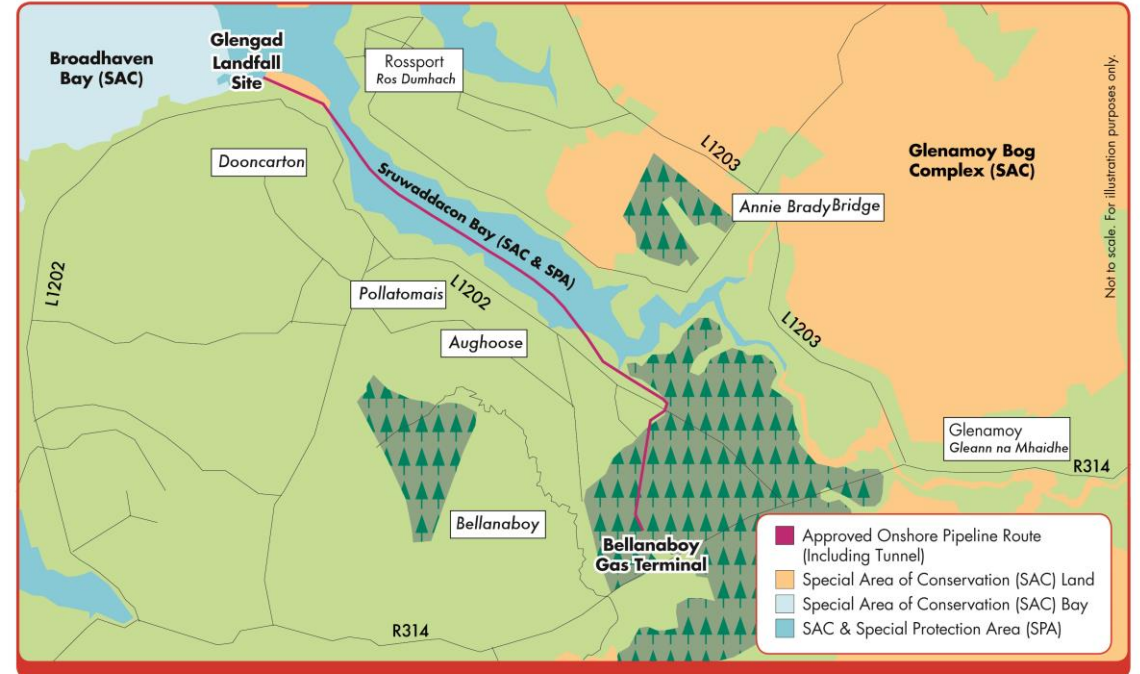
Biodiversity indicators - habitats/species

Summary of pre-existing key habitat types:

- Lowland Atlantic Blanket bog – eroded and recovered.
- Intertidal sandflats and mudflats
- Nearshore marine habitat
- Saltmarsh
- Woodland – willow scrub

Protected Fauna:

- Potential for impact on Special Protection Area (SPA) interests- wintering water birds.
- Impact on EU annexed (otter) and other protected fauna (badgers & common frog)



Habitat type - heavily eroded blanket bog



March 2011



February 2012



April 2016



May 2017

Site reinstatement



Marine inlet- salt marsh and intertidal

2010

2012

2012

May 2017

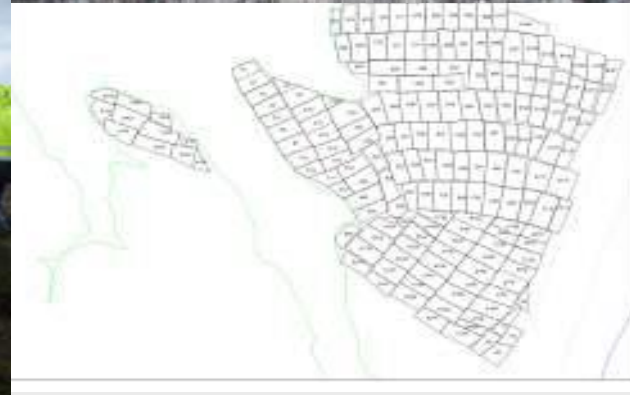
May 2017

2015

Sept 2015

2017/05/23

2017/05/23



Examples of site level biodiversity indicators - Corrib

| Monitoring / location | Indicator – qualitative & quantitative |
|--|---|
| General habitats - impacted areas | Regular monitoring for the presence of key /character species for particular habitats showing that the structure and function of the habitat is maintained. |
| Specific area - lowland Atlantic blanket bog | The presence of a high percentage cover of peat-forming Sphagnum species in blanket bog habitat equates to ‘active’ blanket bog status habitat, the ultimate goal of blanket bog habitat rehabilitation. |
| Salt marsh | Regular monitoring and annual quadrat survey confirmed the presence of key species and richness with a stable physical structure which was similar to pre-construction status. |
| Water birds - Special Protection Area. | Monitoring the qualifying interests for the SPA, in particular the Light-bellied Brent Goose population (of international importance). Bird surveys undertaken pre, during and post construction. The water bird data independently analysed. The general water bird community and overall abundance has been consistent and notable changes were not identified. |
| Non-avian fauna - Otter | Monitoring presence and usage of the area pre-, during and post construction is key to demonstrating impact levels i.e. did they maintain their patterns of usage, continuing to use regular sprainting sites throughout. |

