



An Roinn
Ealaíon, Oidhreachta agus Gaeltachta
Department of
Arts, Heritage and the Gaeltacht



7.3.4 Best options for meeting livestock water requirements workshop

Conservation Strategy to meet the necessary Planning Control and SAC Notifiable Actions under the AranLIFE Action C3: Enhancement of livestock management for grazing through the provision of a water-supply infrastructure

Directly connected to or necessary for the site's conservation objectives:

The lack of water facilities to support grazing cattle is a significant reason for the reduction in grazing intensity in the more inaccessible parts of the island farms, and leads to scrub encroachment on priority habitats within the project area. The provision of water infrastructure was identified as one of the major needs of island farming throughout the pre-application stages of project planning, with the repair of existing and installation of new rain catchers provided for in the project application (see photos below). Without a reliable source of water for cattle within land parcels, farmers are less likely to put their cattle out to graze these areas. Under Article 17 reporting, the Overall Status and future prospects for some of these habitats (e.g. limestone pavement, orchid-rich grassland) are reported as “Bad”, for reasons including ongoing succession to scrub caused by the abandonment or changes to traditional farming practices. These are based on an overall assessment of the relative importance of the negative impacts/threats and positive influences observed for a particular habitat. In order to secure the future prospects of these habitats and to reach an “improving” trend for these sites, a more sustainable and sustained approach to providing water for grazing cattle is needed throughout the farming system, but particularly in areas that are more inaccessible to the farmer. The decline in water availability is as a result of several factors including: breakdown of existing structures and low agricultural return to reconstruct in fragmented fields, alternative income, e.g. tourism leading to reduced time available to carry water to livestock; high number of visitors has led to overall water shortages as outlined below and this may have had effects on existing springs.

Due to the nature of the farming landscape, many fields do not have direct access to boreens or roadways and can only be accessed through other fields and the bearnacháí (stone-filled gaps) in the stone walls, over rough and rocky terrain. As a result, over the last century, the installation of permanent rain-catchers in these inaccessible land parcels, often built with limestone slabs, had become established as the most efficient way that farmers could ensure continued access to water for grazing cattle over a number of days, particularly where springs were not present. However, the installation of new water-catchers (of approx. 3x2 metres in up to 170 throughout the islands) has the potential to result in some loss of Annexed habitats, depending on the parcel/accessibility issues. In addition, because of their nature, the consent of Galway County Council may also be required. Thus, alternative ways of achieving the sustainable water supply needed for the grazing of the sites and the achievement of the conservation objectives are being explored. The Project Team will work with farmers to identify the water infrastructure that is needed to maintain grazing in specific areas of the farms in order to benefit the project's habitats. Discussions with the County Council with regard to the longer-term solutions for the islands, the agricultural practices needed to sustain the conservation condition of the sites, and potentially with Irish Water, may also be of benefit.

One of the many challenges of farming on the Aran Islands is the fragmentation of the farm unit (Photo 1). Many parcels of the farm are accessible only by narrow boreens (wide enough for 1 cow) (Photo 2), or through neighbours' land. This is a significant obstacle to the provision of sufficient water to all parts of the farm.

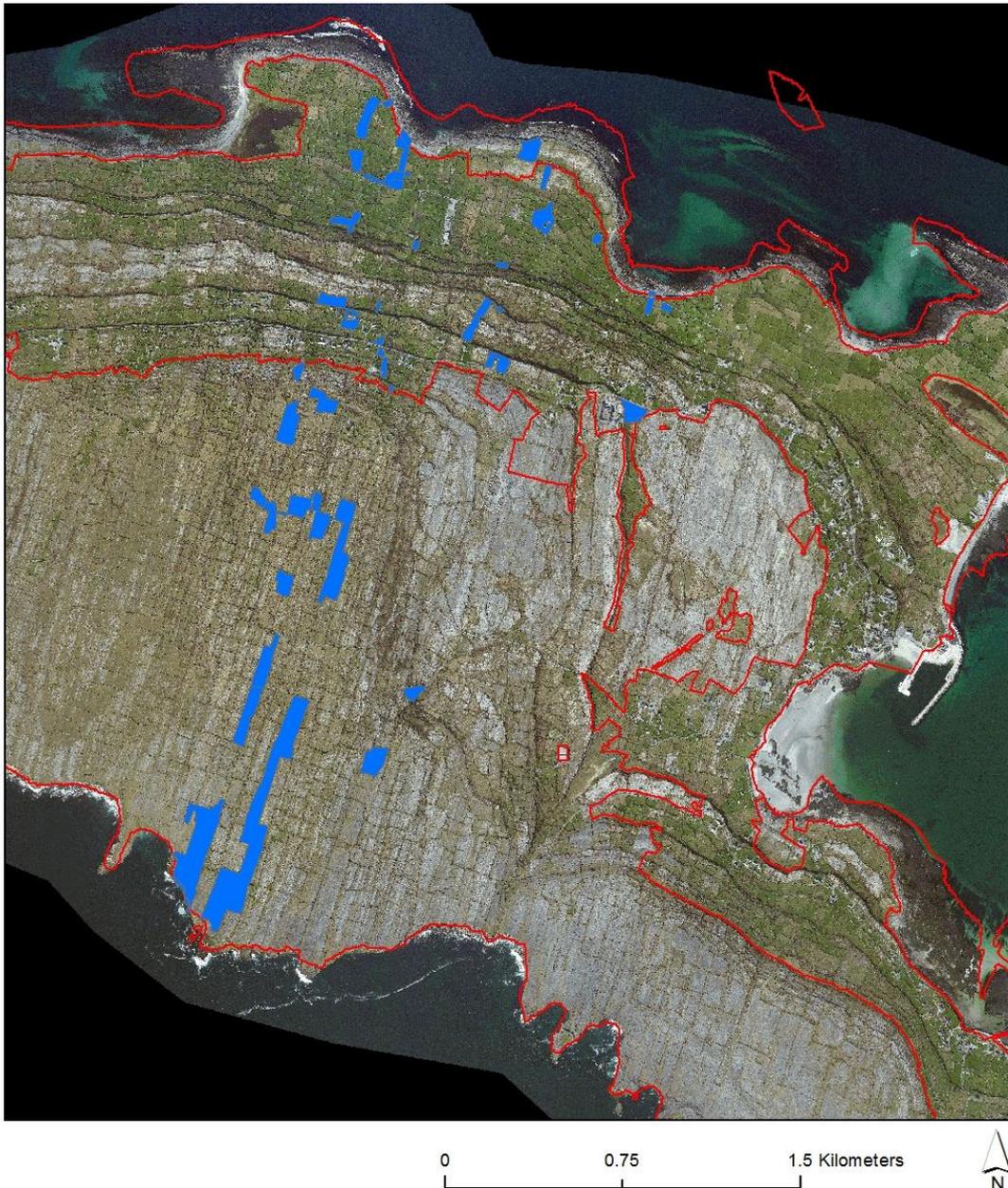


Photo 1: The extent and distribution of a participating farm on Inis Mór. This highly fragmented farm structure is typical throughout the Aran Islands. The farm land parcels are coloured blue and the red line denotes the SAC boundary. Approximately 75% of the Aran Islands are within the SAC.



Photo 2. Throughout the Aran Islands there are networks of narrow boreens allowing access to fragmented field parcels. The transportation of water by tractor via these narrow boreens is not possible.

Sufficient water supply is a major issue for the farmers of the Aran Islands. Historically this was rectified by farmers through the construction of stone rain catchers that collected the rain and stored it in adjacent troughs (Photo 3). In the absence of rivers and mains water supply, rain catchers offer the only sustainable source of water for grazing livestock.

Rain catchers consist of a sloped flat area which runs into a collection tank. This has been the traditional method for harvesting rainwater within the Aran Islands since the early 1900's. Building and repairing of rain catchers is an intrinsic part of the farming system on the islands. Traditionally these were built with adjacent stone (photo 3) but more recently concrete block and plaster has been used.



Photo.3. Typical traditionally stone built rain catcher with flat slope to catch and direct the rainwater into a storage tank.

Many of these rain-catchers have slowly disintegrated overtime and the economics of farming small units means that when these structures break down, there is insufficient funding within the farm to replace them. The labour requirements to transport water to these plots are also prohibitive, as the labour investment required, when combined with the low economic returns, has severely compromised the viability of bringing water to these areas repeatedly. This then leads to the abandonment of large areas of priority habitat due to the lack of water for cattle within the land parcel. The replacement of these structures, in addition to the other project actions, will allow the recommencement of agricultural activity in these land parcels and the restoration of habitats to favourable condition. Reducing the labour requirement of this farming system is critical to ensuring its viability and attractiveness to future generations. The Project Team have worked with farmers to identify the water infrastructure that is required to maintain grazing in specific areas in order to benefit the project's target habitats. In all cases we have assessed the following

1. The necessity of the structure to ensure continued grazing that is essential for the maintenance and conservation of the priority habitat
2. The suitability for alternatives, e.g. existing mains water supply, portable pasture pumps, plastic tanks within existing rain catchers, use of portable plastic tanks
3. The effect on overall site, e.g. landscape
4. The siting of the structure in order to minimise impact on Annex I habitat,
5. The siting away from historic monuments, both listed within the Archaeological Survey Database and newly discovered features identified during the farm visits.



1. The necessity of the structure to ensure continued grazing that is necessary for the maintenance and conservation of the priority habitat.

The total water requirement of a dry cow is 40 to 55 litres per day. Suckler cows producing milk need 5 to 9 litres more than a dry cow, i.e. 49 to 64 litres per day (www.teagasc.ie). The porous nature of the limestone means natural sources of surface water are limited. Existing natural water sources are confined to springs, the majority of which are transient in nature and not widely distributed throughout the islands.

Ireland has an obligation to maintain and improve the conservation status of priority Annex I habitats on the Aran Islands. Grazing is the essential management tool to achieve this. On semi-natural limestone habitats, undergrazing results in increased dominance of a limited number of species such as blue moor-grass (*Sesleria caerulea*), purple moor-grass (*Molinia caerulea*) and a range of bryophytes. Within a few years, plant species diversity is significantly reduced. On sheltered sites, undergrazing is leading to scrub encroachment, particularly bramble (*Rubus fruticosus*). In the 2013 grassland survey (O'Neill *et al.* 2013), scrub was noted as a habitat in 6 of the 7 grassland survey sites on all 3 islands and as an “adjacent” habitat for the same 6 sites. Scrub encroachment also has a deleterious impact on protected species that are not directly targeted by the project but that will benefit from its actions, such as the Chough (*Pyrrhocorax pyrrhocorax*), large carder bee *Bombus muscorum* var. *allenellus*), Marsh Fritillary (*Euphydryas aurinia*) and narrow-mouthed whorl snail (*Vertigo angustior*). These threatened species rely on appropriately grazed, species-rich grassland habitats. The lack of sufficient water provision has been identified as one of the main reasons for undergrazing of priority habitat which leads to scrub encroachment and habitat degeneration throughout the islands.

2. The suitability of alternatives, e.g. existing mains water supply, portable pasture pumps, plastic tanks within existing broken rain catchers, use of portable plastic tanks

Existing mains water supply

One possible alternative is the use of existing mains water supply. Each Island has a reservoir system with the water piped to each household. Presently there is no mains water piped to areas beyond the existing villages. This option is not feasible owing to:

1. Fragmented nature of the farms would lead to additional piped infrastructure being required, which would involve construction work to bury the pipes and have a significant impact on the integrity of the SAC site (photo 2).
2. Whilst the carrying of water to land parcels is a possibility on sites adjacent to the road, it is not feasible for the greater number of fields where access by vehicles is not possible (Photo 3).
3. There is presently insufficient mains water to meet the present requirements of the islands. This year alone several ship loads of water had to be cargoed in from the main land to Inis Oírr and Inis Méain. The usage of more mains water by livestock will compound this issue.

Portable pasture pumps

Portable pasture pumps use the animals' effort to pump water from an existing source. Animals learn that pushing the activator rewards them with water. This offers a way of supplying water in a fragmented site. Due to the success of these in the Burren it was



envisaged that they would be widely used within the AranLIFE project, however farm visits and discussions with the farmers indicates that whilst they will have a role in some sites, their usage will be limited overall, since

1. They still require a volume of water, e.g. from tank or rain catcher
2. Springs on the island tend to be trickle fed and therefore do not produce enough volume to meet the requirements of the pasture pump. Though springs have been identified throughout the islands where a volume of water can be stored rather than running to ground. This will also involve tank construction to catch and hold spring fed water. This method was used effectively in the Burren.

The AranLIFE Project will trial a number of pasture pumps where situations are suitable.

Plastic tanks

Plastic tanks offer a way of storing water as an alternative to rain catchers, and are widely used on the mainland. Their application on the island is more limited as they offer no method of catching water. The major issue on the islands is both the harvesting and storing of water. There are two other disadvantages, firstly they are visually intrusive on the landscape as even black stands out in the flat, grey Aran landscape, and secondly the empty tanks are vulnerable to being blown away creating an unsightly litter problem.

The AranLIFE project plan to use some tanks fitted in to existing leaking rain catchers providing tank manufactures can meet the required size specification. We also like to manufacture a prototype of a portable rain catcher to test viability; however its application would be limited to sheltered sites so a number of traditional rain catchers would still be required

3. The effect on the visual landscape

Rain catchers have been an integral part of the Aran Islands landscape for the last century, offering a sustainable and generally visually non-intrusive method of harvesting water within a land parcel. The proposed number of rain catchers required under this project will have no effect on the overall landscape as their siting will be managed within an agreed framework to minimise any interference. The catchers are generally low and small in nature. Those covered with stone may blend in more easily than those made with concrete block or finished with other materials, but these do also weather rapidly and soften to blend with the islands' network of stone walls. Positioning the catchers adjacent to walls rather than centrally in fields will also reduce any visual impact.

It is hoped that this siting framework will be agreed with Galway County Council, as a project co-financier and as the planning authority for the islands, as they catchers could become de-exempted development, if they are considered to interfere with the character of a landscape, or a view or prospect of special amenity value or special interest, that is protected under a County Development Plan.

Framework for siting to avoid interference with the character of the landscape or special amenity/interest views:

New catchers will be:

- Sited more than 10 metres from any public road
- Sited more than 100 metres from any house (other than the house of the person providing the structure), school, residential building, save with the consent of the owner
- Typically constructed or finished with available loose stone.



- If there is insufficient loose stone available, catchers may need to be constructed with other materials but efforts will be made to construct them in such a way as to minimise any visual impact.
- Catchers will, wherever possible, be constructed against a stone wall so that they blend in more easily.
- The catchers will be sited outside of the views or prospects of special amenity value or special interest of the islands.

4. The siting of the structure in order to minimise and avoid impact on Annex I habitat

Installing rain catchers will have a positive effect on the Annexed habitats of the Aran Island SACs, as the provision of such water infrastructure will facilitate the grazing necessary for the maintenance and restoration of favourable conservation condition of the priority habitats. To minimise and avoid any localised impacts on the Annexed habitats in implementing this measure, the siting of rain catchers will have the following conditions:

- A limit on the overall size of a rain catcher to limit the scale of the intervention
- Where rock is used in the construction, no limestone pavement will be damaged as material will be sought from existing loose rock already present.
- They will be built on existing areas of damaged grassland, within the footprint of an old rain catcher or on areas of solid limestone pavement where their construction will not damage the pavement area or affect pavement vegetation, i.e. no excavation work.
- European Court of Justice C-258/11 concerning the Galway City Outer Bypass:

“Article 6(3) of the Habitats Directive must be interpreted as meaning that a **plan or project** not directly connected with or necessary to the management of a site **will adversely affect the integrity of that site if it is liable to prevent the lasting preservation of the constitutive characteristics of the site that are connected to the presence of a priority natural habitat whose conservation was the objective** justifying the designation of the site in the list of SCIs, in accordance with the Directive. The precautionary principle should be applied for the purposes of that appraisal.”

In combination with the grazing, very positive effects on balance on the same attribute and target.

5. The siting away from historic monuments, both listed within the National Monuments Survey Database and newly discovered features identified during the farm visits.

No rain catchers will be constructed on or adjacent to historic monuments. During the farm plan process all sites registered on the National Monuments Survey Database are noted and will influence the siting of the rain catcher. In addition any potential site identified by the AranLIFE team will be forwarded to the National Monument Service within DAHG. No construction will be permitted near these sites.

Range of rain catchers recorded on Inis Oírr, Summer 2014.

From a sample of 23 rain catchers measured on Inis Oírr, the average footprint was 3.49m² and ranged from 0.84m² to 9.17m². This variation in size is usually a reflection of the grazing potential of the field, with larger rain catchers sited in fields that require more grazing. The variations are also related to the style of each farmer similar to the diversity in stone walls throughout the islands, and have become part of the cultural landscape as much as the walls. Stone was the traditional building material however blocks have been more recently used.

