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| Title of Report: | FEASIBILITY OF PURCHASING SEABIN EQUIPMENT FOR COUNCIL HARBOUR AND MARINA FACILITIES |
| Committee Report Submitted To: | ENVIRONMENTAL SERVICES COMMITTEE |
| Date of Meeting: | 13th October 2020 |
| For Decision or For Information | FOR DECISION |

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| Linkage to Council Strategy (2019-23) | |
| Strategic Theme | Protecting and Enhancing Our Environments & Assets |
| Outcome | Our natural assets will be carefully managed to generate economic and social returns without compromising their sustainability for future generations. |
| Lead Officer | Head of Capital Projects, Energy & Infrastructure |

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|------------------------------------|-----|
| Budgetary Considerations | |
| Cost of Proposal | N/A |
| Included in Current Year Estimates | N/A |
| Capital/Revenue | N/A |
| Code | N/A |
| Staffing Costs | N/A |

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|--|--|--------|-----------|
| Screening Requirements | Required for new or revised Policies, Plans, Strategies or Service Delivery Proposals. | | |
| Section 75 Screening | Screening Completed: | Yes/No | Date: N/A |
| | EQIA Required and Completed: | Yes/No | Date: N/A |
| Rural Needs Assessment (RNA) | Screening Completed | Yes/No | Date: N/A |
| | RNA Required and Completed: | Yes/No | Date: N/A |
| Data Protection Impact Assessment (DPIA) | Screening Completed: | Yes/No | Date: N/A |
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Assessment of Seabin Equipment for Council Harbour and Marina facilities

1.0 Background

Members of the Environmental Services Committee have asked officers to investigate the potential purchasing and use of a sea based litter recovery product, called the Seabin.

The Borough Harbour Master has investigated the equipment and the suitability of all of Council's Harbour and Marina facilities, assessing each on the specific criteria required for the equipment to operate effectively.

A feasibility report is included for member's information (appendix A).

2.0 Recommendation

Based on the information from the supplier, other operator feedback and the assessment of Council facilities, it is recommended that Council do not purchase any Seabin equipment for their Harbour and Marina facilities.

Appendix A

Feasibility study on the potential purchasing and installation of SEABIN.



Causeway Coast and Glens Borough Council

Harbours and Marinas

Council officers have been asked to evaluate the potential installation of the waste recovery product, “The SEABIN”, within the Causeway Coast and Glens Council area.

Introduction to the Seabin

The following statement is written by the UK & Ireland supplier and gives a brief description of the product and how it works.

“A Seabin is simply a floating rubbish bin that collects unwanted rubbish from any area of water that is known to have accumulations of rubbish, it is designed to be installed in ports, marinas, and yacht clubs. Rubbish and debris are brought into the seabin thanks to a pump which creates a flow of water around the bin on the surface of the water. Any debris that comes within a 10/15m radius around the seabin will be pulled towards the seabin and collected within the seabins catch bag. Once the catch bag is full the catch bag can easily be removed and replaced with a second catch bag that is provided with each seabin.

Seabins are a great addition for any areas that is known to have a high accumulation of rubbish and the seabin unit will provide a continuous cleaning service all year round if required.”

Background to the Seabin project

One of the goals for the Seabin Project is to provide practical and tangible solutions to reduce the plastics in our oceans which is one of the world’s greatest problems. The first prototype was installed in Mallorca 2016 with further installation of additional units in several other pilot locations June-July 2017. The first commercial units were released to market in spring 2018 with the first Seabin being installed in N.I. at Bangor Marina, Co. Down in late 2018, in partnership with Ards & North Down Borough Council. Several other units were installed in other NI Council areas including Carrickfergus and Glenarm Marinas by Mid & East Antrim Borough Council and Belfast Harbour marina pontoons at the Odyssey.

Summary of Seabin site condition requirements

Inland and Coastal Marina Systems, based in Co. Offlay, are the official distributor of Seabins throughout Ireland and the UK. From discussion with the supplier and reviewing the promotional and technical information available, the following points can be made.

- Seabin costs are circa £3650.00 per unit for a pontoon mounted option. Carriage is additional or can be collected from the supplier.
- A bracket to mount the unit on a Harbour wall is available at an additional cost of £1000.00. However installation costs could be expensive and may require other statutory approvals.

- Installation of the Seabin can be completed by the customer or the supplier can come to site and install at an additional unconfirmed cost.
- A localised 240v waterproof electrical supply is to be available within 3-4 mtrs of the fixed Seabin location. If none is available, a new supply installation is required at cost.
- The unit utilises a 500W motor and estimated consumption of electricity is approximately £1.00 (per 12 hr day)
- The unit only is suitable to operate in a maximum wave height of 0.3 mtr (1foot)
- Maximum current or tidal flow less than 1.5knts. It is not suitable for a river environment or where significant tidal flow is present.
- The Seabin relies on creating its own inward surface movement or pull of the water to move the litter items into the collection filter.
- The efficiency and collection radius from the unit is significantly reduce when factoring in environmental conditions such as wind and direction, swell, tidal flow and prop wash.
- The location of the unit has to have sufficient depth (greater than 1.2mtrs) under the bottom or the floating unit, at the lowest tide possible, LAT (Lowest Astronomical Tide).
- The unit should be installed where there is safe access for staff to conduct regular checking and cleaning. Pontoon structures provide the optimum safe platform from which to manage the Seabin.
- It is assessed that only one person is required to remove the filter bag for daily emptying and cleaning.
- The unit weighs over 50kgs and will require 2 persons to remove the unit for periodic washing and cleaning.
- If the unit is switched off for periods longer than 24hrs it should be removed from the water to prevent fouling.
- The product figures are quoted based on 12hrs operation per day, as the Seabin should be not left running unattended.
- The collection filter is capable of collecting particles as small as 2mm dia.
- It is advised to check the equipment at least twice daily. This is to ensure the collection bag is not full to capacity or that there is no material blocking the water flow to the pump.
- It is not recommended to install the Seabin where floating algae is present as this has the potential to clog the mesh in the collection bag and filtering system.
- If the collection unit is full or the mesh filter gets clogged and the Seabin continues to run without cleaning, this can potentially cause the motor burn out prematurely.

Seabins at other N.Ireland marina facilities.



This picture shows the first N. Ireland SEABIN unit fitted on trial at Bangor Marina pontoon.

The unit was one of the first to be installed in Northern Ireland with additional units being installed in Carrickfergus, Glenarm and Belfast marinas. The CCGBC Harbour Master visited the Bangor site to see first-hand the equipment and discuss its operation with the Bangor Harbour Master. At the time of the visit the equipment was turned off due to it malfunctioning.

Testimony from several of the marina facilities in N. Ireland, where Seabins have been installed, has stated that they have proven to be inefficient and produced little or no benefit towards litter collection. The only positive outcome that both operators have noted is that there is a positive PR aspect from installing the Seabin and this has produced some educational benefits for those interested.

Feasibility assessment of CCGBC Harbour and Marina facilities.

Council have 15 Harbour, Marina and slipway facilities, located from Magilligan in the West to Redbay in the East and including Rathlin Island and facilities on the river Bann. The table below identifies the suitability assessment for each facility, taking into account the information and specification from the manufacture and supplier above.

To meet the “Yes” criteria the facility must have had capability most or all of the time.

If the criteria only was not fulfilled or only on occasion a “No” response was given.

| | Water location | Tide/ current under 1.5 knts | Pontoon Structure for Installation and servicing | Power readily available | Wave height under 0.3 mtr | Sufficient water depth | Staff available daily to empty and maintain the Seabin | Has a suitable location within a natural litter collection area | Is the area clear of organic material and seaweed | Suitable site for full time Seabin deployment |
|------------------------|----------------|------------------------------|--|-------------------------|---------------------------|------------------------|--|---|---|---|
| Magiligan | River | No | No | No | No | Yes | No | No | No | No |
| Drumaheglis Marina | River | No | Yes | Yes | Yes | Yes | Summer only | No | No | No |
| Christie Park Pontoon | River | No | Yes | No | Yes | Yes | No | No | No | No |
| Coleraine Marina | River | No | Yes | Yes | Yes | Yes | No | No | No | No |
| Portstewart Harbour | Sea | Yes | No | No | No | Yes | No | No | Yes | No |
| Portrush Harbour | Sea | Yes | No | No | No | Yes | Summer only | No | No | No |
| Portrush Pontoon | Sea | Yes | Yes | Yes | No | Yes | Summer only | Periodically | No | No |
| Port an Dhu | Sea | Yes | No | No | No | No | No | No | No | No |
| Portballintrae Harbour | Sea | Yes | No | No | No | Yes | No | No | No | No |
| Dunseverick Harbour | Sea | Yes | No | No | No | No | No | No | No | No |
| Ballintoy Harbour | Sea | Yes | No | No | No | No | No | No | No | No |
| Ballycastle Harbour | Sea | Yes | Yes | Yes | No | Yes | Yes | Periodically | Yes | No |
| Ballycastle Marina | Sea | Yes | Yes | Yes | Yes | Yes | Yes | Periodically | Yes | Yes |
| Rathlin Harbour | Sea | Yes | Yes | Yes | Yes | Yes | Summer only | Periodically | Yes | No |
| Rathlin Marina | Sea | Yes | Yes | Yes | No | Yes | Summer only | No | No | No |
| Dalriada Harbour | Sea | Yes | No | No | No | No | No | No | No | No |
| Waterford Slipway | Sea | Yes | No | No | No | No | No | No | No | No |
| Redbay Harbour | Sea | Yes | No | No | No | Yes | No | No | No | No |

In summary, the following determinations are made.

- River sites are not suitable due to current flow.
- For equipment installation and regular safe access, a pontoon with a power supply is required.
- The area needs to be in a sheltered area, away from harbour entrances and direct swell or choppy conditions. The location must have sufficient depth at low tide.
- Once installed and operating, the Seabin requires regular monitoring and cleaning by staff. This can be time consuming and the unit should be turned off when there are no staff available to check it.
- The chosen location has to be in an area with a natural litter collection point and not a hot spot for floating seaweed.

As a result of the criteria required, only one site, at Ballycastle Marina, is deemed potentially viable. However, it is likely that the location would only be efficient on certain wind directions when litter is blown towards the Seabin.

In conclusion, the Seabin is not considered to be a suitable product for any of the Council Harbour and Marina facilities.

For information

Current collection of litter within CCGBC Harbour & Marina facilities

Marine litter is not a new problem and is being addressed in a variety of ways. With numbers of visitors to the seaside having increased over the last 20 years and a larger variety of prepacked food and consumable products, general waste generation has increased

significantly. The majority of coastal locations have issues with litter, at various times during the busy season.

Locally, the issue of litter ending up in the marine environment tends to be wind related, where bins are overwhelmed by the volume of waste produced or where litter is discarded by the user. During windy periods litter has been identified to have blown off the landward areas over the low quay edges. Birds also pick at waste hanging out of bins and the items then get spread across the adjacent area, such as car parks or promenades.

Deliberate throwing of litter into the sea has not been observed as significant issue in any of the Harbour or Marina areas.

On occasion, some marine waste can be washed into Council Harbours from the sea during storms or river flooding conditions. They tend to be combined with significant quantities of organic matter such as seaweed, sticks, logs and leaves.

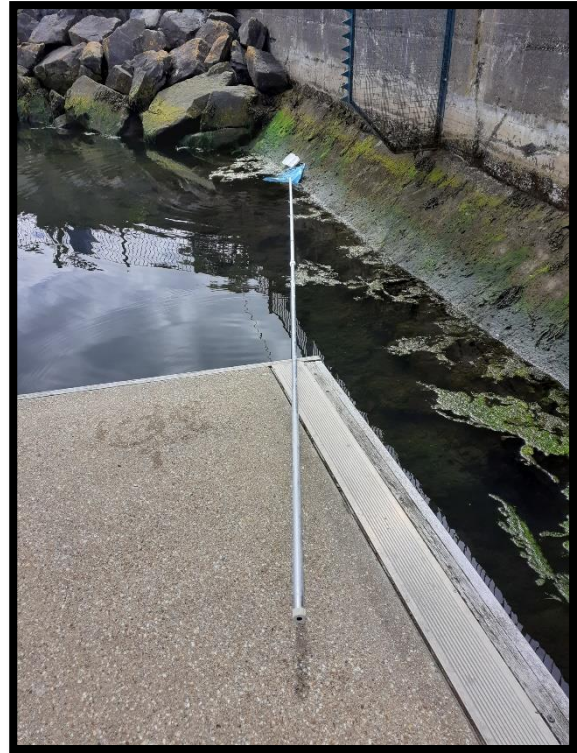


A typical item found within a Harbour or Marina. A small plastic cup trapped amongst the natural seaweed growth.



Currently, a large pool net is used for collection and recovery of floating items

Extendable lightweight nets are deployed to recover any litter or debris floating within the Harbour/Marina areas. The poles can be extended to a reach of 8 mtrs. The can also be used to recover objects from the Harbour seabed if required.



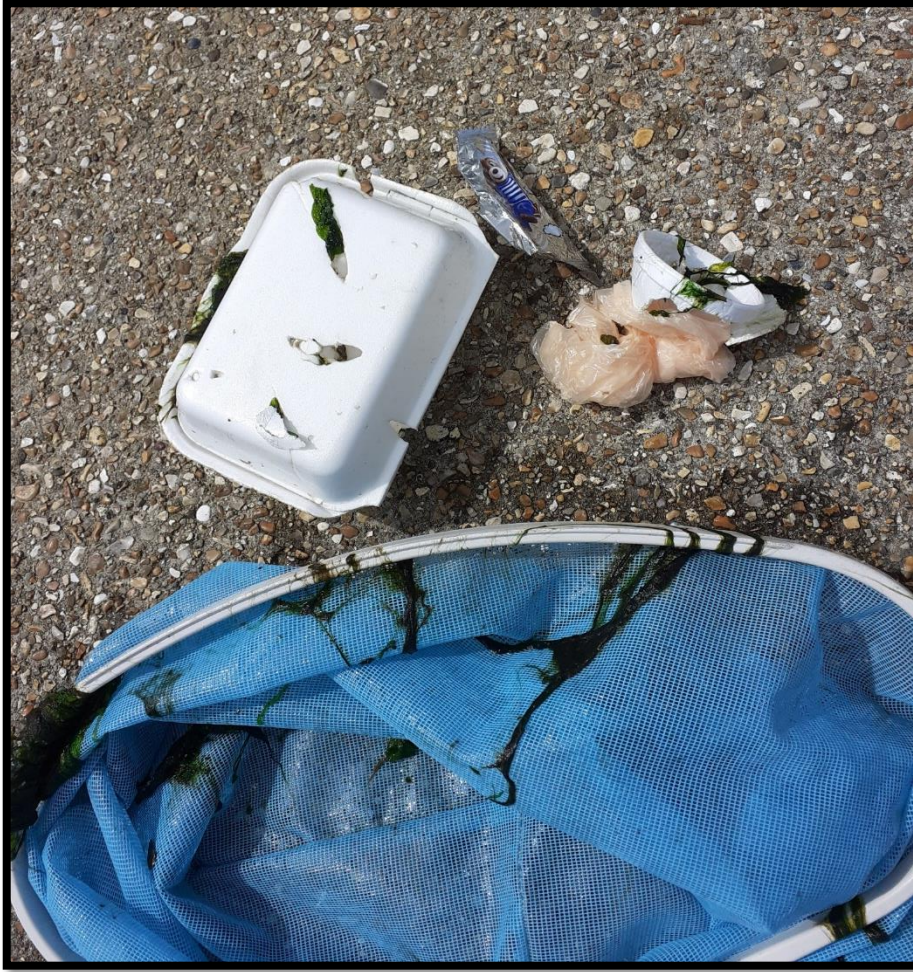
A take away container, blown into the water, has been deposited on the slope at high tide and remains as the tide falls. Packaging material is general made of lightweight material and susceptible to being blown easily by the wind. Fortunately, they float well and can be recovered from around the perimeter walls using an extendable pole net.



A small sweet wrapper is lodged in the natural seaweed growth. It is likely that the item would remain there until wind conditions were strong enough to untangle it. The item can be retrieved using the net.



Both items recovered successfully into the net. The collection of seaweed material is unavoidable as it is abundant in certain areas of the marina basin.

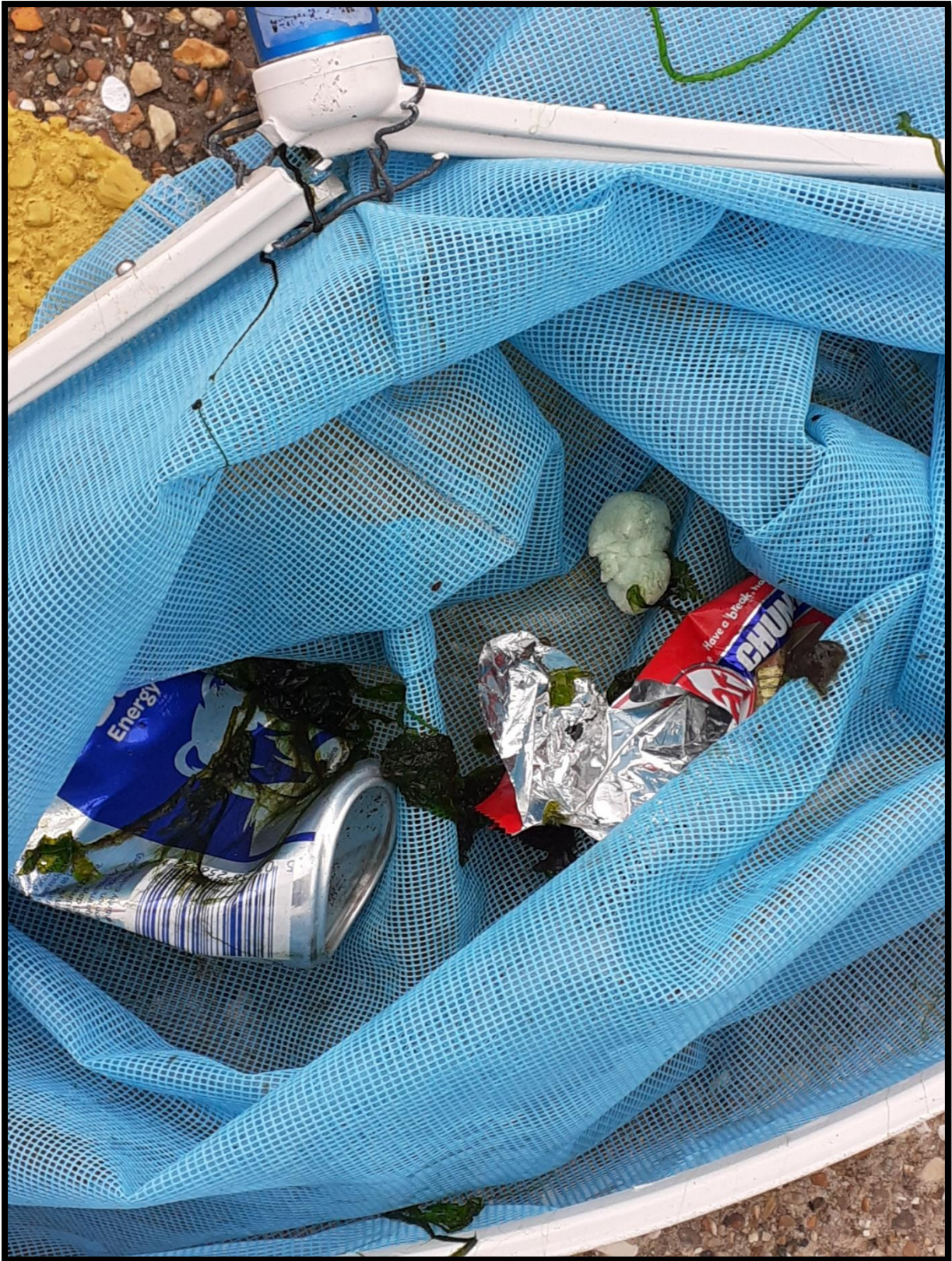


4 separate items recovered from the one area. A takeaway container, a sweet wrapper, a small polystyrene cup and a small plastic bag.

Note the holes in the takeaway box. This is a common observation from litter recovered. The holes are as a result of seagulls and crows pulling litter from nearby bins. Mostly due to bins being full to capacity or the waste not being pushed fully into the bin.



Litter blown over the edge of footpath onto rocks 3 mtrs below, above the tidal zone. Waste collection from this area is dangerous on foot due to access issues and uneven surface. Recovery can be achieved easily using the extendable net with shallow paddle attachment to move the objects off the rocks where they can be recovered afloat.



Once the litter is afloat, the pole attachment can change to the recovery net and is used to recover the objects.

Summary

Consultation with the other Harbour facilities in N. Ireland has demonstrated that they believe Seabins are not a product that benefits their litter collection. The equipment has proven to be difficult to maintain and keep operating effectively.

Floating litter is currently not a significant issues within Council facilities and is manageable through current collection methods.

Current methods in CCGBC facilities are adaptable to the location of litter present and can be deployed in all facilities, if required.

Council should at alternative measures and consider installing greater capacity litter bins with anti-bird covers in busy areas, and review timings and frequency of bin emptying by the cleansing team.

Consider a fresh media campaign on seaside litter while increasing enforcement in busy areas.

As a solution to prevent land based litter entering the water, Council should consider installing litter nets to quayside railings to prevent discarded litter over the edge and into the water.

This report is specific to Harbour and Marina locations and has not taken into account, any issues relating to litter on the Council beaches or surrounding coastline.

Recommendation

Following analysis of the Seabin product and the requirements to install and manage the equipment operationally, it is recommended that Council do not purchase this product as a method to address marine litter collection in its Harbour and Marina areas.