

# Appendix 3.3

## Comparison of Environmental Effects for Reasonable Alternative Sites



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## Statement of Purpose

This comparison of environmental effects of alternative sites has been prepared to meet the requirements of both the 2011 EIA Directive and the 2014 EIA Directive, as follows:

2011: provide “an outline of the main alternatives studied by the developer and an indication of the main reasons for this choice taking into account the environmental effects”; and

2014: provide “a description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.”

An initial screening of potential sites, having regard to size, accessibility and zoning was completed. This initial stage is described in **Chapter 3** and **Appendix 3.1** of the EIS.

Stage 2 takes the output from Stage 1, and identifies the potential environmental effects of development of a resource recovery centre on these sites, having regard to the strategic environmental assessment (SEA) of the Cork County Development Plan 2022-2028, the information provided in the Cork County Development Plan 2022-2028, and also publicly available information on baseline air quality at the identified sites from the Environmental Protection Agency’s website, epa.ie. These sources of information provide relevant, up-to-date and comparable information on environmental constraints. **Table 2** summarises the findings of Stage 2, facilitating a comparison of environmental effects for the sites.

Alternative site locations considered in Stage 2 include two sites in Little Island, three sites in Carrigtwohill, 15 sites in Ringaskiddy (including two partially occupied by the proposed development site), and one in Bottlehill.

## Comparison of Environmental Effects

A matrix of environmental effects using a colour code system is provided for each of the options considered. This system provides an indication of the potential environmental effects; the green ratings indicate a lower potential for negative environmental effects; the grey ratings represent neutral potential for negative environmental effects, and the amber ratings represent higher potential for negative environmental effects – refer to **Table 2**. The proposed development is located across the two sites identified with a bold outline. The analysis focuses on the potential for negative effects, as these are the greatest potential environmental constraints to development.

## Differentiators between Alternatives

Air Quality potential environmental effects are similar for all the sites included in the assessment, with generally neutral environmental effects expected, except the site in Bottlehill due to its presence in a more rural setting, and slightly better air quality in comparison to the other sites, thus having a higher capacity to accept the proposed development compared to the others. It is therefore rated green.

Regarding Biodiversity, proximity to designated sites (SPAs, SACs, or proposed NHAs) was considered in order to identify those sites with higher potential for negative environmental effects. If the option site was directly adjacent to (i.e. within 100m) of a designated site (SAC, SPA or NHA/pNHA), then the option site was rated as amber. Sites located at further distances, were rated neutral. No sites were rated green, given that all sites were within 2.5km of a designated site and given the potential for hydrological connections to these sites.

Hydrology (Flood Risk) potential environmental effects, rated amber, were identified for those sites either bounding or immediately adjacent (within 100m) of the flood extents identified in the relevant CFRAMS mapping, with the ones representing the lower potential for environmental effects at greater distances, rated neutral (less than 500 m distance) or green (more than 500 m distance).

The higher potential for environmental effects in terms of Archaeological and Architectural Heritage is represented by sites with one or more features of importance within its site boundary. These are rated amber. For those sites with recorded features adjacent to/bounding the site, the rating is neutral, and if the closest recorded features are further away, the sites are rated green.

In terms of Roads and Traffic, the sites with the higher potential for environmental effects are the ones with poor (e.g. not wide enough for two cars to pass) or constrained (e.g. not suited to carry HGV traffic) access roads leading to them combined with access to only a local or regional road. Sites with lower potential for negative environmental effects would have good access directly to a motorway. As there are several permutations than can occur in between these two examples, **Table 1** below sets out how the final rating for each site is arrived at.

**Table 1 Roads & Traffic Differentiators**

Access Quality	Access to Road Type		
	Regional	Primary Route	Motorway
<b>*Good-No constraints</b>			
<b>**Constrained</b>			
<b>***Poor</b>			

\* No road upgrades required

\*\* Road upgrades required but achievable

\*\*\*Significant road upgrades required but unlikely to be achievable

Population and Human Health potential environmental effects were rated amber when the site was in close proximity (within a 100 m distance approximately) or adjacent to residential properties, amenity areas or other potentially sensitive receptors such as schools or colleges. Increased separation from population receptors is reflected in neutral or green ratings.

Material Assets were assessed in terms of Land Use, Land Take, and Zoning, with the higher potential for environmental effects rated amber on sites with planning applications already in place for areas of the site, when the site is predominantly in agricultural use or if the zoning of the site in terms of the Cork County Development Plan 2022-2028 is not specifically for 'Industry' or any related uses. Those sites that do not have those constraints are rated neutral.

In terms of Landscape and Visual, the higher potential for environmental effects is represented by sites with scenic routes in close proximity or adjacent to the site and therefore rated amber. Better screened sites, or sites further from designated scenic routes are accordingly rated either neutral or green.

Major Accidents and Disasters is represented by the higher potential for environmental effects when the site is in close proximity or adjacent to a Seveso site, given an amber rating. Increased separation from Seveso sites is reflected accordingly with neutral or green ratings.

**Table 2: Comparison of environmental effects**

Option	Air Quality	Biodiversity	Hydrology (Flood Risk)	Cultural Heritage	Roads and Traffic	Population and Human Health	Material Assets	Landscape and Visual	Major Accidents and Disasters
Little Island									
Option 1 (LI-I-01)									
Option 2 (LI-I-05)									
Carrigtwohill									
Option 1 (CT-I-01)									
Option 2 (CT-I-02)									
Option 3 (CT-I-03)									
Ringaskiddy									
Option 1 (RY-I-01)									
Option 2 (RY-I-02)									
Option 3 (RY-I-03)									
Option 4 (RY-I-04)									
Option 5 (RY-I-05)									
Option 6 (RY-I-06)									
Option 7 (RY-I-08)									
Option 8 (RY-I-09)									
Option 9 (RY-I-10)									
Option 10 (RY-I-11)									

Option	Air Quality	Biodiversity	Hydrology (Flood Risk)	Cultural Heritage	Roads and Traffic	Population and Human Health	Material Assets	Landscape and Visual	Major Accidents and Disasters
Option 11 (RY-I-13)									
Option 12 (RY-I-14)									
Option 13 (RY-I-15)									
Option 14 (RY-I-16)									
Option 15 (RY-I-18)									
Bottlehill									
Option 1 (Bottlehill)									

## Little Island

### Option 1 (LI-I-01)

- **Air Quality** – Closest air quality station (Station 60. Cobh Carrignafof) with average values for PM<sub>10</sub> and PM<sub>2.5</sub> below the Air Quality Standards in the last 6 months (January-July). Therefore, rated **neutral potential** for negative environmental effects.
- **Biodiversity** – Site is adjacent to Cork Harbour SPA (within 50m of site boundary), Great Island Channel SAC (within 50m of site boundary), and proposed Natural Heritage Area. Therefore, rated **higher potential** for negative environmental effects.
- **Hydrology (Flood Risk)** – Bounded by flood zone to the north (Flood Zone A) with some areas in Flood Zone B. Therefore, rated **higher potential** for negative environmental effects.
- **Archaeological, Architectural and Cultural Heritage** – *The south western boundary contains the site of CO 077-025 Castle. This is a Recorded Archaeological Monument. The Zone of Archaeological Potential associated with the medieval castle may be quite extensive. Any development at the south west quadrant of the site will require a detailed Archaeological Assessment to clarify there is no subsurface archaeology within the development site before development can be considered in this area including geophysical survey and licensed archaeological testing.*<sup>1</sup> Therefore, rated **higher potential** for negative environmental effects.
- **Roads and Traffic** – Good location a short distance from N25 Interchange. However, existing access to eastern end of Little Island constrained. Therefore, rated **higher potential** for negative environmental effects.
- **Population and Human Health** – Site on southern side bounding existing residential estates. Therefore, rated **higher potential** for negative environmental effects.
- **Material Assets (Land Use/Land Take/Zoning)** – Predominantly in agricultural use, planning permission in place business park development at eastern side of the site, extending the existing Anchor Business Park. Site is zoned for ‘Industry’. Therefore, rated **higher potential** for negative environmental effects.
- **Landscape and Visual** – Visually exposed to views from north and east. Scenic route S41 north of the site. Therefore, rated **higher potential** for negative environmental effects.
- **Major Accidents and Disasters** - Upper Tier Seveso site within site boundary (Murphy Transport, Ltd., southeast area). Therefore, rated **higher potential** for negative environmental effects.

### Option 2 (LI-I-05)

- **Air Quality** – Closest air quality station (Station 10. Heatherton Park) with average values for PM<sub>10</sub> and PM<sub>2.5</sub> below the Air Quality Standards in the last 6 months (January-July). Therefore, rated **neutral potential** for negative environmental effects.
- **Biodiversity** – This site is located adjacent (within 50m of site boundary) to the Cork Harbour Special Protection Area (SPA). Douglas River Estuary, Rockfarm Quarry, Dunkettle Shore, Glanmire Wood, and Great Island Channel proposed Natural Heritage Areas are less than 2km from the site. Great Island Channel Special Area of Conservation is less than 2km from site to the east. Therefore, rated **higher potential** for negative environmental effects.
- **Hydrology (Flood Risk)** – Site bounded by flood zone to the south and east (within the site). Mostly Flood Zone A (highest risk) and some patches with Flood Zone B. Therefore, rated **higher potential** for negative environmental effects.

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<sup>1</sup> <https://www.corkcoco.ie/sites/default/files/2022-06/volume-4-south-cork.pdf> - Page 154

- **Archaeological, Architectural and Cultural Heritage** – No sites of archaeological or architectural significance on the site. Therefore, rated **lower potential** for negative environmental effects.
- **Roads and Traffic** – Good location a short distance from N25 Interchange. Permission in place for access off the roundabout to serve the western end of the site. Therefore, rated **neutral potential** for negative environmental effects.
- **Population and Human Health** – Residential properties north of the site, circa 300m, as well as Leaside Football Club and Little Island Sports Complex. Therefore, rated **higher potential** for negative environmental effects.
- **Material Assets (Land Use/Land Take/Zoning)** – Predominantly in agricultural use, with south-western part of the site is subject to a current application for a regional distribution centre. An expansion of the data centre developments is envisaged for the residual lands. Land is zoned for ‘Industrial estate and/or warehousing and distribution with provision for local access road’. Therefore, rated **higher potential** for negative environmental effects.
- **Landscape and Visual** – No scenic routes affected by the site. Therefore, rated **lower potential** for negative environmental effects.
- **Major Accidents and Disasters** - Site is adjacent to Upper Tier Seveso site BASF Ireland to the west, Lower Tier BOC Gases to the east, and Lower Tier Janssen Pharmaceuticals to the north. Therefore, rated **higher potential** for negative environmental effects.

## Carrigtwohill

### Option 1 (CT-I-01)

- **Air Quality** – Closest air quality station (Station 60. Cobh Carrignafoey) with average values for PM<sub>10</sub> and PM<sub>2.5</sub> below the Air Quality Standards in the last 6 months (January-July). Therefore, rated **neutral potential** for negative environmental effects.
- **Biodiversity** – This site boundary is approximately 635m from Cork Harbour Special Protection Area (SPA) and the Great Island Channel Special Area of Conservation (SAC) (approximately 55m from site boundary) and proposed Natural Heritage Area. Therefore, rated **higher potential** for negative environmental effects.
- **Hydrology (Flood Risk)** – Flood risk objectives apply to areas on southern, eastern and northern boundaries. Flood Zone A (highest risk) bounds this part of the site. Therefore, rated **higher potential** for negative environmental effects.
- **Archaeological, Architectural and Cultural Heritage** – One recorded site - Haly’s bridge (National Inventory of Architectural Heritage (NIAH)) in the southeastern side of the site boundary. Therefore, rated **neutral potential** for negative environmental effects.
- **Roads and Traffic** – Road access is available but is substandard via narrow local roads of rural character. Access from the south is over a rail bridge on the Cork Midleton line. These roads provide access to the N25. Therefore, rated **higher potential** for negative environmental effects.
- **Population and Human Health** – There are a series of one-off dwellings fronting onto the local roadway at the eastern boundary of the site. Therefore, rated **higher potential** for negative environmental effects.
- **Material Assets (Land Use/Land Take/Zoning)** – The lands are agricultural farmlands comprising a series of fields enclosed by hedgerows. The lands are in several private ownerships. To the east are IDA Ireland owned lands adjoining the Carrigtwohill Business & Technology Park. Site is zoned for ‘Industrial type activities including warehousing and distribution’. Therefore, rated **neutral potential** for negative environmental effects.
- **Landscape and Visual** – Scenic Route S52 adjacent to the north of the site. Therefore, rated **higher potential** for negative environmental effects.



- **Major Accidents and Disasters** - No Seveso sites adjacent to the site. Therefore, rated **lower potential** for negative environmental effects.

#### Option 2 (CT-I-02)

- **Air Quality** – Closest air quality station (Station 60. Cobh Carrignafof) with average values for PM<sub>10</sub> and PM<sub>2.5</sub> below the Air Quality Standards in the last 6 months (January-July). Therefore, rated **neutral potential** for negative environmental effects.
- **Biodiversity** – Cork Harbour Special Protection Area (SPA) (approximately 580m from site boundary), Great Island Channel Special Area of Conservation (SAC) (approximately 350m from site boundary). Therefore, rated **neutral potential** for negative environmental effects.
- **Hydrology (Flood Risk)** – Site bounded by Flood zones within the site to the south, west and east (Flood Zone A). Some patches of Flood Zone B. Therefore, rated **higher potential** for negative environmental effects.
- **Archaeological, Architectural and Cultural Heritage** – One recorded site - Haly's bridge (National Inventory of Architectural Heritage (NIAH)) in the southwestern side of the site boundary. Therefore, rated **neutral potential** for negative environmental effects.
- **Roads and Traffic** – There are a number of potential access points to the site: from local roadways on the western and northern boundaries (both of which are poor options) or through the IDA Ireland Business & Technology Park to the south. These roads provide access to the N25. Therefore, rated **higher potential** for negative environmental effects.
- **Population and Human Health** – Part of the lands at their eastern side are in close proximity to adjoining residential uses. Therefore, rated **higher potential** for negative environmental effects.
- **Material Assets (Land Use/Land Take/Zoning)** – Site in ownership of IDA Ireland and intended to form part of expanded Carrigtwohill Business & Technology Park. Recently subject to an application for a boundary fence for Gilead Sciences. Site zoned for industrial type activities but 'giving priority to high quality manufacturing'. Therefore, rated **higher potential** for negative environmental effects.
- **Landscape and Visual** – Scenic route S42 adjacent to the site to the north. Therefore, rated **higher potential** for negative environmental effects.
- **Major Accidents and Disasters** – No Seveso sites adjacent to the site. Therefore, rated **lower potential** for negative environmental effects.

#### Option 3 (CT-I-03)

- **Air Quality** – Closest air quality station (Station 60. Cobh Carrignafof) with average values for PM<sub>10</sub> and PM<sub>2.5</sub> below the Air Quality Standards in the last 6 months (January-July). Therefore, rated **neutral potential** for negative environmental effects.
- **Biodiversity** – *The need for sensitive design providing for the retention and protection of the green infrastructure features (including protected species and habitats of high biodiversity value) which are known to occur on site.*<sup>2</sup> Cork Harbour SPA and Great Island SAC are approximately 2.2km from the site boundary. Therefore, rated **neutral potential** for negative environmental effects.
- **Hydrology (Flood Risk)** – Site is not bounded by flood zones. Therefore, rated **lower potential** for negative environmental effects.
- **Archaeological, Architectural and Cultural Heritage** – 5 sites included in the Sites and Monuments Records (SMR) within site boundary. Therefore, rated **higher potential** for negative environmental effects.

<sup>2</sup> <https://www.corkcoco.ie/sites/default/files/2022-06/volume-4-south-cork.pdf> - Page 119 (Objective No. CT-I-03)

- **Roads and Traffic** – Access options from the north and south. The northern access would be from a local rural road, the Carrigane Road, which is generally unsuitable. Southern access can be secured from the N25, which is subject to upgrading proposals (hence currently constrained). *Road improvements required to the National Primary network including a new grade separated interchange with the N25.*<sup>3</sup> Therefore, rated **higher potential** for negative environmental effects.
  - **Population and Human Health** – Site is bound by residential properties to the southwest. Therefore, rated **higher potential** for negative environmental effects.
  - **Material Assets (Land Use/Land Take/Zoning)** – This former Amgen site is the location of the Ballyadam convertor station (under construction) for the Celtic Interconnector. As the converter station, and associated electricity infrastructure, will convert the electricity from HVDC to High Voltage Alternating Current (HVAC), which is used on the Irish transmission grid, there may be a concern as to the compatibility of such a facility with a licensed waste-to-energy facility. Site is zoned for ‘Industrial Development’.
- The need to set aside land for a passenger station to serve the proposed development in the medium or longer term, subject to the selection of an agreed location in consultation with Iarnród Éireann.* Therefore, rated **higher potential** for negative environmental effects.
- **Landscape and Visual** – No scenic routes in close proximity to the site. Therefore, rated **lower potential** for negative environmental effects.
  - **Major Accidents and Disasters** – No Seveso sites adjacent to the site. The northern boundary is formed by the Cork-Midleton rail line. Therefore, rated **neutral potential** for negative environmental effects.

## Ringaskiddy

### Option 1 (RY-I-01)

- **Air Quality** – Closest air quality station (Station 60. Cobh Carrignafoy) with average values for PM<sub>10</sub> and PM<sub>2.5</sub> below the Air Quality Standards in the last 6 months (January-July). Therefore, rated **neutral potential** for negative environmental effects.
- **Biodiversity** – Close to but not within Natura 2000 sites; Cork Harbour SPA approximately 230m from site boundary. *Any development on this site will need to take account of the biodiversity sensitivities of the site and area, including the retention and integration of mature hedgerows habitat.*<sup>4</sup> Therefore, rated **neutral potential** for negative environmental effects.
- **Hydrology (Flood Risk)** – Flood Zone A to the north and east of the site, but not within. Therefore, rated **neutral potential** for negative environmental effects.
- **Archaeological, Architectural and Cultural Heritage** – No sites of archaeological or architectural significance on the site. Therefore, rated **lower potential** for negative environmental effects.
- **Roads and Traffic** – Notwithstanding that there is an existing agricultural access, the site is unlikely to be accessed directly from the N28 (hence currently constrained). Therefore, rated **higher potential** for negative environmental effects.
- **Population and Human Health** – Shanbally village centre lies to the southeast. To the west are commercial uses within the Portgate Business Park. The site is in close proximity to the village and adjoining residential uses. Therefore, rated **higher potential** for negative environmental effects.
- **Material Assets (Land Use/Land Take/Zoning)** – The lands comprise a number of agricultural fields under grass and enclosed by hedgerows and small trees. Site zoned as ‘Industry including

<sup>3</sup> <https://www.corkcoco.ie/sites/default/files/2022-06/volume-4-south-cork.pdf> - Page 119 (Objective No. CT-I-03)

<sup>4</sup> <https://www.corkcoco.ie/sites/default/files/2022-06/volume-4-south-cork.pdf> - Page 63 (Objective No. RY-I-01)

*ancillary uses such as associated offices, laboratories, manufacturing and utilities*'. Therefore, rated **higher potential** for negative environmental effects.

- **Landscape and Visual** – S54 in close proximity to the site to the east and north. Therefore, rated **higher potential** for negative environmental effects.
- **Major Accidents and Disasters** – Closest Seveso site (Upper Tier) is Pfizer Pharmaceuticals (approximately 850m east). Therefore, rated **lower potential** for negative environmental effects.

#### Option 2 (RY-I-02)

- **Air Quality** – Closest air quality station (Station 60. Cobh Carrignafof) with average values for PM<sub>10</sub> and PM<sub>2.5</sub> below the Air Quality Standards in the last 6 months (January-July). Therefore, rated **neutral potential** for negative environmental effects.
- **Biodiversity** – Adjacent to Cork Harbour SPA and Monkstown Creek proposed NHA (within 50m of site boundary). Therefore, rated **higher potential** for negative environmental effects.
- **Hydrology (Flood Risk)** – Site is bounded by flood zones to the north and east. Mostly Flood Zone A and small areas of Flood Zone B. Therefore, rated **higher potential** for negative environmental effects.
- **Archaeological, Architectural and Cultural Heritage** – No archaeology or architecture monuments within site boundary. One Sites and Monuments Record (SMR) to the southwest of the site (CO087-038----). Therefore, rated **lower potential** for negative environmental effects.
- **Roads and Traffic** – There is access via an internal roadway off the N28 (hence not constrained). Therefore, rated **neutral potential** for negative environmental effects.
- **Population and Human Health** – The site bound the eastern extent of Shanbally village centre, which includes residential, school and community uses. Therefore, rated **higher potential** for negative environmental effects.
- **Material Assets (Land Use/Land Take/Zoning)** – The site comprises two distinct parts, the Raffeen Creek Golf club, situated at a lower level adjoining the Monkstown Creek and a hard surface car park at a higher level that forms part of a Pfizer Pharmaceutical facility. The lands are in the ownership of BioMarin International Ltd. Site is zoned for '*Industry including ancillary uses such as associated offices, laboratories, manufacturing and utilities*'. Therefore, rated **higher potential** for negative environmental effects.
- **Landscape and Visual** – Site is bounded by scenic route S54 to the west, north and south. Therefore, rated **higher potential** for negative environmental effects.
- **Major Accidents and Disasters** – Upper Tier Seveso site (Pfizer Pharmaceuticals) in close proximity to the east. Therefore, rated **higher potential** for negative environmental effects.

#### Option 3 (RY-I-03)

- **Air Quality** – Closest air quality station (Station 60. Cobh Carrignafof) with average values for PM<sub>10</sub> and PM<sub>2.5</sub> below the Air Quality Standards in the last 6 months (January-July). Therefore, rated **neutral potential** for negative environmental effects.
- **Biodiversity** – Cork Harbour SPA approximately 725m from site boundary and Monkstown Creek proposed NHA. Therefore, rated **neutral potential** for negative environmental effects.
- **Hydrology (Flood Risk)** – Flood Zone A and B north and northwest of the site, but not within the site. Therefore, rated **neutral potential** for negative environmental effects.
- **Archaeological, Architectural and Cultural Heritage** – No sites of archaeological or architectural significance on the site. Therefore, rated **lower potential** for negative environmental effects.

- **Roads and Traffic** – There is an existing local access road which bounds the western side of the site leading to the N28. A road reservation objective applies to almost the entire southern part of the site. There will be no direct access onto the M28 at this location. Access to the site will have to be via local road to the west which would require upgrades (hence constrained). Therefore, rated **higher potential** for negative environmental effects.
- **Population and Human Health** – There are one-off residential dwellings adjoining to the west accessed via a small local road that runs along the site’s western boundary. Therefore, rated **higher potential** for negative environmental effects.
- **Material Assets (Land Use/Land Take/Zoning)** – It comprises a number of large agricultural fields under both grass and crops. A road reservation objective applies to almost the entire southern part of the site. The site is in two separate ownerships. IDA Ireland owns the northern part of the site. Site is zoned for ‘*Industry with provision for appropriate landscaping, along the north western boundary to residential areas.*’ Therefore, rated **higher potential** for negative environmental effects.
- **Landscape and Visual** – No scenic routes around the site, closest to east in Shanbally village (around 800m east). Therefore, rated **lower potential** for negative environmental effects.
- **Major Accidents and Disasters** – No Seveso sites adjacent to the site. Therefore, rated **lower potential** for negative environmental effects.

#### Option 4 (RY-I-04)

- **Air Quality** – Closest air quality station (Station 60. Cobh Carrignafof) with average values for PM<sub>10</sub> and PM<sub>2.5</sub> below the Air Quality Standards in the last 6 months (January-July). Therefore, rated **neutral potential** for negative environmental effects.
- **Biodiversity** – Cork Harbour SPA approximately 675m from site boundary and Monkstown Creek proposed NHA. Therefore, rated **neutral potential** for negative environmental effects.
- **Hydrology (Flood Risk)** – Site not bounded by flood zones. Therefore, rated **lower potential** for negative environmental effects.
- **Archaeological, Architectural and Cultural Heritage** – CO087-119---- : Souterrain : SHANBALLY (Kerrycurrihy By.) One SMR site within site boundary. Another one in close proximity to east, with SMR Zone going over our site boundary. Therefore, rated **higher potential** for negative environmental effects.
- **Roads and Traffic** – There is potential for securing direct access to the N28 to the north, but no suitable access is currently available (therefore constrained). Therefore, rated **higher potential** for negative environmental effects.
- **Population and Human Health** – Residential uses to the immediate north and Shanbally village adjoins the site to the northeast. GAA Club pitch and Hibernian FC pitch in close proximity to the east. Therefore, rated **higher potential** for negative environmental effects.
- **Material Assets (Land Use/Land Take/Zoning)** – It comprises a number of large agricultural fields under both grass and crops. The new M28 road proposal covers the southern part of the site and will, when constructed, split the site in two. A road reservation objective applies to almost all of the southern part of the site. Site zoned for ‘*Industry, with provision for appropriate landscaping, along the eastern and northern boundary to residential areas.*’ Therefore, rated **higher potential** for negative environmental effects.
- **Landscape and Visual** – S54 scenic route to the east of the site. Therefore, rated **higher potential** for negative environmental effects.
- **Major Accidents and Disasters** – No Seveso sites adjacent to the site. Therefore, rated **lower potential** for negative environmental effects.

#### Option 5 (RY-I-05)

- **Air Quality** – Closest air quality station (Station 60. Cobh Carrignafof) with average values for PM<sub>10</sub> and PM<sub>2.5</sub> below the Air Quality Standards in the last 6 months (January-July). Therefore, rated **neutral potential** for negative environmental effects.
- **Biodiversity** – Lough Beg proposed NHA and Cork Harbour SPA (approximately 445m from site boundary). Therefore, rated **neutral potential** for negative environmental effects.
- **Hydrology (Flood Risk)** – Site not within flood zones, but less than 500 m distant. Therefore, rated **neutral potential** for negative environmental effects.
- **Archaeological, Architectural and Cultural Heritage** – There are no recorded monuments on the site. Therefore, rated **lower potential** for negative environmental effects.
- **Roads and Traffic** – There is potential for access from the regional road R613. Therefore, rated **higher potential** for negative environmental effects.
- **Population and Human Health** – There are neighbouring residential properties along the Coolmore – Shanbally road adjacent to the site. Therefore, rated **higher potential** for negative environmental effects.
- **Material Assets (Land Use/Land Take/Zoning)** – The site is currently grazing/ farmland. High voltage powerlines traverse the northern part of the site. Site is appropriately zoned. Therefore, rated **neutral potential** for negative environmental effects.
- **Landscape and Visual** – No scenic routes close to the site. Therefore, rated **lower potential** for negative environmental effects.
- **Major Accidents and Disasters** – Upper Tier Seveso site (Sterling Pharma) close to the east of the site. Therefore, rated **higher potential** for negative environmental effects.

#### Option 6 (RY-I-06)

- **Air Quality** – Closest air quality station (Station 60. Cobh Carrignafof) with average values for PM<sub>10</sub> and PM<sub>2.5</sub> below the Air Quality Standards in the last 6 months (January-July). Therefore, rated **neutral potential** for negative environmental effects.
- **Biodiversity** – Lough Beg proposed NHA and Cork Harbour SPA approximately 595m from site boundary Therefore, rated **neutral potential** for negative environmental effects.
- **Hydrology (Flood Risk)** – Site not within flood zones, but less than 500 m distant. Therefore, rated **neutral potential** for negative environmental effects.
- **Archaeological, Architectural and Cultural Heritage** – There are five recorded monuments on the site, centred around a ringfort to the northwest side. Therefore, rated **higher potential** for negative environmental effects.
- **Roads and Traffic** – There is potential for access from the R613 with direct access to the M28. Therefore, rated **lower potential** for negative environmental effects.
- **Population and Human Health** – One sensitive receptor within 100 m of the site. Therefore, rated **higher potential** for negative environmental effects.
- **Material Assets (Land Use/Land Take/Zoning)** – The site forms part of the Sterling Pharma facility. There is permission in place for a warehouse building on the eastern part of the site. The proposed M28 will result in some land take at the northeastern part of the site. Site is zoned for *‘Industry including small to medium sized enterprises with appropriate measures taken, in consultation with the relevant competent authorities, to take account of the presence of the ring fort on the site.’* Therefore, rated **higher potential** for negative environmental effects.
- **Landscape and Visual** – S54 scenic route to the north (circa 500m). Therefore, rated **higher potential** for negative environmental effects.



- **Major Accidents and Disasters** – Upper Tier Seveso site (Sterling Pharma) adjacent to the west of the site. Lower Tier (Carbon Chemicals) 350m southwest of the site. Therefore, rated **higher potential** for negative environmental effects.

#### Option 7 (RY-I-08)

- **Air Quality** – Closest air quality station (Station 60. Cobh Carrignafof) with average values for PM<sub>10</sub> and PM<sub>2.5</sub> below the Air Quality Standards in the last 6 months (January-July). Therefore, rated **neutral potential** for negative environmental effects.
- **Biodiversity** – Cork Harbour SPA (within 50m of site boundary) and Lough Beg proposed NHA adjacent to the east. Therefore, rated **higher potential** for negative environmental effects.
- **Hydrology (Flood Risk)** – Site is bounded by Flood zones to the east and south (mostly Flood Zone A). Therefore, rated **higher potential** for negative environmental effects.
- **Archaeological, Architectural and Cultural Heritage** – CO087-060---- : House - vernacular house : BARNAHELY (within the site). Therefore, rated **higher potential** for negative environmental effects.
- **Roads and Traffic** – There is potential for access from a local road that accesses onto the R613 with direct access to the M28. Therefore, rated **lower potential** for negative environmental effects.
- **Population and Human Health** – There is a small cluster of residential uses on the southwestern boundary of the site. Therefore, rated **higher potential** for negative environmental effects.
- **Material Assets (Land Use/Land Take/Zoning)** – Generally flat, the site incorporates agricultural grassland comprising large fields separated by hedgerows. Some lands at the southern side have also been sown for crops. Lands on the northern part of the site are currently the subject to large scale construction works. The lands are in the ownership of IDA Ireland are earmarked for foreign direct investment to accommodate large scale employment uses. Site is zoned for *'Large stand alone industry with suitable provision for landscaping and access points from the R613 and provision for appropriate landscape buffering, to all residential areas.'* Therefore, rated **higher potential** for negative environmental effects.
- **Landscape and Visual** – No scenic routes around the site. Therefore, rated **lower potential** for negative environmental effects.
- **Major Accidents and Disasters** – Carbon Chemicals adjacent to the west (Lower Tier). Sterling (Upper Tier) also adjacent to the west. Therefore, rated **higher potential** for negative environmental effects.

#### Option 8 (RY-I-09)

- **Air Quality** – Closest air quality station (Station 60. Cobh Carrignafof) with average values for PM<sub>10</sub> and PM<sub>2.5</sub> below the Air Quality Standards in the last 6 months (January-July). Therefore, rated **neutral potential** for negative environmental effects.
- **Biodiversity** – Cork Harbour SPA (approximately 405m from site boundary) and Lough Beg proposed NHA to the south. Therefore, rated **neutral potential** for negative environmental effects.
- **Hydrology (Flood Risk)** – Site bounded by flood zone A to the east. Therefore, rated **higher potential** for negative environmental effects.
- **Archaeological, Architectural and Cultural Heritage** – No sites of archaeological or architectural significance on the site. Therefore, rated **lower potential** for negative environmental effects.
- **Roads and Traffic** – There is access via the N28 on the site's northern boundary with direct access to the new M28 protected road scheme. Therefore, rated **lower potential** for negative environmental effects.

- **Population and Human Health** – Closest residential properties 500m west of the site. Therefore, rated **neutral potential** for negative environmental effects.
- **Material Assets (Land Use/Land Take/Zoning)** – The lands to the northern side (c. 5ha in area) are in the ownership of Indaver Ireland and available for development. Lands at the southern side are in the ownership of IDA Ireland. Indaver were previously granted planning permission for an energy recovery facility use on the site. Site zoned for ‘*Suitable for the extension of the opposite Third Level Educational campus.*’ Therefore, rated **neutral potential** for negative environmental effects.
- **Landscape and Visual** – Scenic route S54 adjacent to the site to the north. Therefore, rated **higher potential** for negative environmental effects.
- **Major Accidents and Disasters** – No Seveso sites adjacent to the site. Therefore, rated **lower potential** for negative environmental effects.

#### Option 9 (RY-I-10)

- **Air Quality** – Closest air quality station (Station 60. Cobh Carrignafof) with average values for PM<sub>10</sub> and PM<sub>2.5</sub> below the Air Quality Standards in the last 6 months (January-July). Therefore, rated **neutral potential** for negative environmental effects.
- **Biodiversity** – Lough Beg proposed NHA adjacent to the site to the south and Cork Harbour SPA circa 200m south. Therefore, rated **higher potential** for negative environmental effects.
- **Hydrology (Flood Risk)** – Site bounded by flood zone A to the south and small patches of flood zone B. Therefore, rated **higher potential** for negative environmental effects.
- **Archaeological, Architectural and Cultural Heritage** – There are several recorded monuments on the western side of the site, mainly associated with Castlewarren House, a protected structure. Therefore, rated **higher potential** for negative environmental effects.
- **Roads and Traffic** – There is potential for access off a local road to the west of the site. Access along the southern boundary would be via a narrow local road of rural character. This road, Tower Road, is to be upgraded as part of the M28 road scheme which ultimately provides access to the M28. Therefore, rated **neutral potential** for negative environmental effects.
- **Population and Human Health** – Open space zoning objective RY-O-06 is to form a buffer between this industrial site and residential dwellings within Ringaskiddy village centre. There are also dispersed one-off residential dwellings to the eastern boundary. Ringaskiddy National School is located on the southern boundary of the site. Therefore, rated **higher potential** for negative environmental effects.
- **Material Assets (Land Use/Land Take/Zoning)** – The lands comprise agricultural farmland incorporating a series of grassed fields separated by hedgerows. Site is zoned for ‘*Industry, with provision for appropriate landscaping along the northern boundary with green infrastructure (RY-GC-06) and to the residential areas to the south and eastern boundaries of site.*’ Therefore, rated **neutral potential** for negative environmental effects.
- **Landscape and Visual** – S54 scenic route to the north. Therefore, rated **higher potential** for negative environmental effects.
- **Major Accidents and Disasters** – No Seveso sites adjacent to the site. Therefore, rated **lower potential** for negative environmental effects.

#### Option 10 (RY-I-11)

- **Air Quality** – Closest air quality station (Station 60. Cobh Carrignafof) with average values for PM<sub>10</sub> and PM<sub>2.5</sub> below the Air Quality Standards in the last 6 months (January-July). Therefore, rated **neutral potential** for negative environmental effects.
- **Biodiversity** – Cork Harbour SPA (within 50m of site boundary) and Lough Beg proposed NHA adjacent to the west and south. Therefore, rated **higher potential** for negative environmental effects.

- **Hydrology (Flood Risk)** – Site bounded by flood zone A to the west and south. Small patches of Flood Zone B. Therefore, rated **higher potential** for negative environmental effects.
- **Archaeological, Architectural and Cultural Heritage** – No sites of archaeological or architectural significance on the site. Therefore, rated **lower potential** for negative environmental effects.
- **Roads and Traffic** – Access is very poor via a narrow local road. Tower Road, but this road is to be upgraded as part of the M28 Road Scheme which ultimately provides access to the M28. Therefore, rated **neutral potential** for negative environmental effects.
- **Population and Human Health** – Ringaskiddy National School bounds the site on its northern side. There are a number of one off residential and farm dwellings to the northeast of the site. Therefore, rated **higher potential** for negative environmental effects.
- **Material Assets (Land Use/Land Take/Zoning)** – A large part of the eastern side of the site is planted with trees. Other areas are in agricultural use, either sown for crops or under grass for grazing. The lands are in several different ownerships, with all landholdings under 4ha, thus requiring land assembly to accommodate a large-scale waste to energy recovery centre. Site zoned for ‘*Industry, with provision for the maintenance of a planted buffer zone along the southern boundary to nature conservation area, the scale of which will be determined at project level.*’ Therefore, rated **higher potential** for negative environmental effects.
- **Landscape and Visual** – Scenic route S54 to the north but not adjacent to the site. Therefore, rated **neutral potential** for negative environmental effects.
- **Major Accidents and Disasters** – No Seveso sites adjacent to the site. Therefore, rated **lower potential** for negative environmental effects.

#### Option 11 (RY-I-13)

- **Air Quality** – Closest air quality station (Station 60. Cobh Carrignafoey) with average values for PM<sub>10</sub> and PM<sub>2.5</sub> below the Air Quality Standards in the last 6 months (January-July). Therefore, rated **neutral potential** for negative environmental effects.
- **Biodiversity** – Cork Harbour SPA (within 50m of site boundary) and Lough Beg proposed NHA adjacent to the site to the south. Therefore, rated **higher potential** for negative environmental effects.
- **Hydrology (Flood Risk)** – Small areas designated as flood zones in the south of the site. Therefore, rated **higher potential** for negative environmental effects.
- **Archaeological, Architectural and Cultural Heritage** – No sites of archaeological or architectural significance on the site. Therefore, rated **lower potential** for negative environmental effects.
- **Roads and Traffic** – There is potential for access via the local road L-6517 to the east of the site. access to western side of the site will require significant road upgrades. There is access to Tower Road which is to be upgraded as part of the M28 Road Scheme which ultimately provides access to the M28. Therefore, rated **neutral potential** for negative environmental effects.
- **Population and Human Health** – There are a number of residential properties on the boundaries of the site. Therefore, rated **higher potential** for negative environmental effects.
- **Material Assets (Land Use/Land Take/Zoning)** – It comprises mainly agricultural fields sown for crops or under grass for grazing. Areas at the east side are scrubland. The lands are in numerous different ownerships, with all landholdings under 3ha, thus requiring land assembly to accommodate a large-scale industrial use. Site zoned as ‘*Industry, with provision for the maintenance of a planted buffer zone along the southern boundary to nature conservation area.*’ Therefore, rated **higher potential** for negative environmental effects.
- **Landscape and Visual** – No scenic route in proximity, with closest being S54 in Ringaskiddy to the north. Therefore, rated **lower potential** for negative environmental effects.



- **Major Accidents and Disasters** – Lower Tier site (Hovione) adjacent to the east. Therefore, rated **higher potential** for negative environmental effects.

#### Option 12 (RY-I-14)

- **Air Quality** – Closest air quality station (Station 60. Cobh Carrignafof) with average values for PM<sub>10</sub> and PM<sub>2.5</sub> below the Air Quality Standards in the last 6 months (January-July). Therefore, rated **neutral potential** for negative environmental effects.
- **Biodiversity** – Cork Harbour SPA approximately 830m from site boundary and Lough Beg proposed NHA to the northeast. Therefore, rated **neutral potential** for negative environmental effects.
- **Hydrology (Flood Risk)** – No flood zones within or close to the site. Therefore, rated **lower potential** for negative environmental effects.
- **Archaeological, Architectural and Cultural Heritage** – No sites of archaeological or architectural significance on the site. Therefore, rated **lower potential** for negative environmental effects.
- **Roads and Traffic** – There is an existing local access road (constrained in width) which bounds the western side of the site providing access to the N28. Therefore, rated **higher potential** for negative environmental effects.
- **Population and Human Health** – Residential properties to the east, together with Hibernians FC football pitch. Therefore, rated **higher potential** for negative environmental effects.
- **Material Assets (Land Use/Land Take/Zoning)** – It comprises a number of large agricultural fields under both grass and crops. The lands are generally level. The lands are in two separate ownerships. IDA Ireland owns the northern part of the site. Site zoned for *‘Industry, with provision for appropriate landscaping, in particular along the western boundary.’* Therefore, rated **neutral potential** for negative environmental effects.
- **Landscape and Visual** – No scenic routes close to the site. Therefore, rated **lower potential** for negative environmental effects.
- **Major Accidents and Disasters** – No Seveso sites adjacent to the site. Therefore, rated **lower potential** for negative environmental effects.

#### Option 13 (RY-I-15)

- **Air Quality** – Closest air quality station (Station 60. Cobh Carrignafof) with average values for PM<sub>10</sub> and PM<sub>2.5</sub> below the Air Quality Standards in the last 6 months (January-July). Therefore, rated **neutral potential** for negative environmental effects.
- **Biodiversity** – Cork Harbour SPA (approximately 160m from site boundary) and Lough Beg proposed NHA to the south. Therefore, rated **neutral potential** for negative environmental effects.
- **Hydrology (Flood Risk)** – No flood zones within the site. Therefore, rated **lower potential** for negative environmental effects.
- **Archaeological, Architectural and Cultural Heritage** – Martello Tower is within the site boundary. Therefore, rated **higher potential** for negative environmental effects.
- **Roads and Traffic** – There is access to the northern part of the site from the N28 with direct access to the new M28 protected road scheme. and access to the southern part from the L6517 local road also with direct access to the new M28 protected road scheme. Therefore, rated **lower potential** for negative environmental effects.
- **Population and Human Health** – Ringaskiddy village is located to the northwest. Therefore, rated **higher potential** for negative environmental effects.
- **Material Assets (Land Use/Land Take/Zoning)** – The southern part of the site is subject to a planning permission for the extraction of soil. These lands, and the entire southern part of the site,

are in the ownership of IDA Ireland. The northern part of the site is in the ownership of Indaver. Site is zoned for *'Suitable for large stand alone industry with suitable provision for appropriate landscaping and protection of the access points and provision for open space buffer to the Martello Tower and its associated pedestrian accesses'*. Therefore, rated **higher potential** for negative environmental effects.

- **Landscape and Visual** – Scenic route S54 to the north of the site. Therefore, rated **higher potential** for negative environmental effects.
- **Major Accidents and Disasters** – Lower Tier Seveso site (Hovione) to the south of the site. Therefore, rated **higher potential** for negative environmental effects.

#### Option 14 (RY-I-16)

- **Air Quality** – Closest air quality station (Station 60. Cobh Carrignafof) with average values for PM<sub>10</sub> and PM<sub>2.5</sub> below the Air Quality Standards in the last 6 months (January-July). Therefore, rated **neutral potential** for negative environmental effects.
- **Biodiversity** – Cork Harbour SPA (approximately 620m from site boundary) and Lough Beg proposed NHA south of the site. Therefore, rated **neutral potential** for negative environmental effects.
- **Hydrology (Flood Risk)** – Flood Zone A on east and north of the site. Small patches of Zone B. Therefore, rated **higher potential** for negative environmental effects.
- **Archaeological, Architectural and Cultural Heritage** – 2 Midden sites within site boundary. Therefore, rated **higher potential** for negative environmental effects.
- **Roads and Traffic** – There is access to the site via the L2545 local road with direct access to the new M28 protected road scheme. There is a partially completed internal access roadway to the larger western site. Therefore, rated **lower potential** for negative environmental effects.
- **Population and Human Health** – Western side is a large flat site incorporating the Beaufort research centre and bounding the National Maritime College of Ireland to its west. No residential properties in close proximity. Therefore, rated **higher potential** for negative environmental effects.
- **Material Assets (Land Use/Land Take/Zoning)** – It comprises two elements, split by the access road to Haulbowline Island (L2545). On the western side is a large flat site incorporating the Beaufort research centre and bounding the National Maritime College of Ireland to its west. To the south of this is the N28 / L2545 and a public car park area adjacent to Gobby Beach. The lands are in the ownership of UCC and in use by the Port of Cork. Site zoned for *'Suitable for the extension of the adjacent Third Level Educational Campus and enterprise related development including marine related education, enterprise, research and development.'* Therefore, rated **higher potential** for negative environmental effects.
- **Landscape and Visual** – Scenic route S54 to the south of the site. Therefore, rated **higher potential** for negative environmental effects.
- **Major Accidents and Disasters** – No Seveso sites adjacent to the site. Therefore, rated **lower potential** for negative environmental effects.

#### Option 15 (RY-I-18)

- **Air Quality** – Closest air quality station (Station 60. Cobh Carrignafof) with average values for PM<sub>10</sub> and PM<sub>2.5</sub> below the Air Quality Standards in the last 6 months (January-July). Therefore, rated **neutral potential** for negative environmental effects.
- **Biodiversity** – Cork Harbour SPA (within 50m of site boundary) and Monkstown Creek proposed NHA adjacent to the west, with Lough Beg proposed NHA south of the site. Therefore, rated **higher potential** for negative environmental effects.

- **Hydrology (Flood Risk)** – Small patches of Flood Zone A and B within the site. Therefore, rated **higher potential** for negative environmental effects.
- **Archaeological, Architectural and Cultural Heritage** – No sites of archaeological or architectural significance on the site. Therefore, rated **lower potential** for negative environmental effects.
- **Roads and Traffic** – There is access via the N28 which runs along the southern boundary of the site with direct access to the new M28 protected road scheme. Therefore, rated **lower potential** for negative environmental effects.
- **Population and Human Health** – Ringaskiddy village lies to the south of the site containing a range of residential and community uses. Therefore, rated **higher potential** for negative environmental effects.
- **Material Assets (Land Use/Land Take/Zoning)** – It comprises the Port of Cork facility at Ringaskiddy. Site zoned as ‘Port Facilities and Port Related Activities.’ Therefore, rated **higher potential** for negative environmental effects.
- **Landscape and Visual** – Scenic route S54 adjacent to the site. Therefore, rated **higher potential** for negative environmental effects.
- **Major Accidents and Disasters** – Upper Tier Seveso (Pfizer Pharmaceuticals) adjacent to the west. Therefore, rated **higher potential** for negative environmental effects.

## Bottlehill

### Option 1 (Bottlehill)

- **Air Quality** – Closest air quality station (Station 82. Mallow) with average values for PM<sub>10</sub> and PM<sub>2.5</sub> below the Air Quality Standards in the last 6 months (January-July), and lower than the other sites considered. It is therefore rated **lower potential** for negative environmental effects.
- **Biodiversity** – Blackwater River SPA boundaries to the east and west. Over 2km distance for both of them to the site. Therefore, rated **neutral potential** for negative environmental effects.
- **Hydrology (Flood Risk)** – the site does not bound any areas shown on the CFRAMS mapping, but there are flood zones to the east and west and within 500 m. Therefore, rated **neutral potential** for negative environmental effects.
- **Archaeological, Architectural and Cultural Heritage** – CO042-082---- : Burial : TOOREEN SOUTH (Barretts By.) within the site. Therefore, rated **higher potential** for negative environmental effects.
- **Roads and Traffic** – A roadway from the N20 has been constructed to the site. Therefore, rated **neutral potential** for negative environmental effects.
- **Population and Human Health** – A few residential clusters around, especially in the Bottlehill centre to the southwest, but not immediately adjacent to the site. Therefore, rated **neutral potential** for negative environmental effects.
- **Material Assets (Land Use/Land Take/Zoning)** – Large parts of the designated area are in use as forestry plantations with both mature and semi-mature trees. No specific zoning objective. The CDP states that there is scope for a specialised role in the area of integrated waste management and waste to energy. Parts of the site are in the ownership of Coillte and in forestry use. Other lands remain available for landfill development or other compatible projects. Therefore, rated **higher potential** for negative environmental effects.
- **Landscape and Visual** – Scenic route (S12) adjacent to the west. Therefore, rated **higher potential** for negative environmental effects.
- **Major Accidents and Disasters** – No Seveso sites adjacent to the site. Therefore, rated **lower potential** for negative environmental effects.