

5. Constraints Inventory, Predicted Impacts & Suggested Mitigation

The constraints inventory below is tabularised as per the NRA published guidelines on constraints studies for both archaeological and architectural heritage (NRA n.d.; NRA n.d.a). All constraints are also shown on relevant mapping provided in this report.

In addition to the published information of the archaeological and architectural heritage of the study area, the constraints inventory below also includes potential archaeological and cultural heritage sites that were identified during the archaeological walkover. *Unrecorded* or 'new' monuments and structures have also been provided here as recorded during the walkover and the analysis of the aerial photo. High resolution digital aerial photos (orthophotos) were examined for the purpose of this archaeological assessment. Nothing of an archaeological nature was noted on the photo. Much of the green field areas for pipelines were inaccessible at the time of writing and only aerial photos were used. The WWTP site was inspected. The red pipelines (along roads) were wind-screen surveyed and portions walked.

For the purposes of the Constraints assessment and this report, the constraints have been allocated a unique code "CH" in order to clearly identify them in the report and the accompanying mapping. All other pertinent codes are provided in the table (for instance RMP numbers, inventory numbers and Protected Structure numbers) in order to aid any cross-referencing that may be required.

5.1 Archaeological Monuments Constraints Inventory (figs 19-23; Table 5)

The following are the archaeological monuments in the vicinity of the study area, which are likely to be impacted by the proposed development. There is a description of each monument as they appear in the *Archaeological Inventory of County Cork- Volume II: East and South Cork* (Power 1994). Where possible these sites were visited in the field. Due to the scale of the development, only those recorded monuments whose ZAP are predicted to be impacted by the development have been included as CH sites. Other pertinent information has been included in the description where available.

Many of the pipes proposed to be positioned through green field locations and in private property. Aerial photos were consulted and where possible were viewed from roads or gateways. Nothing of an archaeological nature was noted on these. However, there remains the potential for archaeological features to be present at a very low above ground register, which may not manifest on aerial photos. There remains the possibility that subsurface unrecorded archaeological remains may be impacted during the positioning of these pipes. To mitigate against this, it is suggested that **ARCHAEOLOGICAL MONITORING** takes place at all of the green field pipe locations.

The WWTP proposed site was inspected and field walked (see above). Nothing new of an archaeological nature was noted as being extant during the inspection. The proposed site is adjacent to two recorded archaeological monuments (CH9 & CH10). It is suggested that this site, due to its scale of the proposed development that the WWTP site be **ARCHAEOLOGICAL TEST TRENCHED** in advance of any development there. It is also proposed (see below) that a suitable buffer zone around CH9 & CH10 be instated, within which no development should be undertaken (this should include pipe routes)..

The recorded archaeological monuments predicted to be impacted by the proposed development are:

Constraint Study Code	Reference Nos	Legal Status	Townland	Monument Type	National Grid Reference	Information Source	Information Detail	Type of Impact Predicted	Suggested Mitigation Measure
CH1 (see CH16 also)	CO087-006--- Inventory 4614	Recorded monument	Rathanker	Ringfort	17590/06740	RMP Inventory	Indicated. In pasture, on south-facing slope. Roughly circular area (35.3m n-s; 32.5m E-W) defined by heavily overgrown earthen bank (H1.85m) SE to SW; low rise elsewhere, with slight depression externally to NW. Break in low rise to NW and E. Possible souterrain (5140) in interior.	Indirect: pipe impacting ZAP of monument	Monitoring of pipeline in vicinity of ZAP for monument
CH2	CO087-013--- Inventory 5193	Recorded monument	Ballywilliam	Holy Well	18127/06719	RMP Inventory	Indicated 'Tubberlaonann' Roadside. Enclosed by rectangular stonewall; roofed with slab. Surrounding area wet; overgrown; no longer in holy use.	Possible inadvertent damage when pipe trench is dug, due to proximity of monument to roadside	Securely fence off during pipe works (remove fencing when project complete). Monitoring of pipeline in vicinity of ZAP for monument
CH3	CO087-024--- Inventory 4973	Recorded monument	Parkgarriff	Ringfort	17599/06616---	RMP Inventory	Indicated. In pasture, on south-facing slope. Shown on 1842 OS map as circular enclosure (diam. c. 40m); as slight curve in NNW-SSE field fence on 1902 and 1934 OS maps. Modern bungalow now occupies site. Field fence (h 1.2m) SW to	None. Monument is no longer extant and obscured by modern construction	Monitoring of pipeline in vicinity of ZAP for monument

							NW, possibly retains original bank. Fosse (d 0.95m) outside bank.		
CH4	CO087-025--- Inventory 5186	Recorded monument	Ballyfouloo	Holy Well	17567/06574	RMP Inventory	Indicated 'Tobernadihy' In wooded area, beside road. Site not located. According to Hurse (1926, 90) well closed but 'rounds were made and votive gifts offered' and 'the old thorn bush or tree remains'.	Indirect: pipe impacting ZAP of monument	Monitoring of pipeline in vicinity of ZAP for monument
CH5	CO087-026--- Inventory 6155	Recorded monument	Monkstown (Castlefarm)	Lime Kiln	17626/06533	RMP Inventory	Indicated. Built against natural slope. Front south-facing; heavily overgrown with arched recess (wth 2.6m; D 2.7m), front of recess partially infilled with rubble, stoking hole evident. Funnel infilled; rear of kiln collapsed.	Indirect: Possible inadvertent damage when pipe trench is dug, due to proximity of monument to roadside	Securely fence off during pipe works (remove fencing when project complete). Monitoring of pipeline in vicinity of ZAP for monument
CH6	CO087-033--- Inventory 6293	Recorded monument and Protected Structure 00579	Carrigaline Middle	Mill	17307/06249	RMP Inventory	Indicated. Late 18 th /early 19 th century flour mill, in Carrigaline town. Shown as L-shaped structure on 1842 OS map. Rectangular 4-storey mill (long axis N-S), now used as a store. Roof double-half-hipped. Wooden floor intact; also remains of hoist system and winnow. Courtyard to North enclosed on three sides by additional buildings.	Indirect: pipe impacting ZAP of monument. Monument already renovated for modern use.	Monitoring of pipeline in vicinity of ZAP for monument
CH7	CO087-036-01 CO087-036-02	Recorded monument and Protected Structure	Carrigaline Middle	Graveyard Church Church of Ireland Church	17414/06259 17415/06259 17419/06259	RMP Inventory	On north shore Owenboy estuary, on south side of road; rectangular area (c. 50m E-W; c. 80m N-S) enclosed by stone wall; still in use, recent extension on	Indirect: pipe impacting ZAP of monument. Monument	Monitoring of pipeline in vicinity of ZAP for monument

	CO087-036-03 Inventory 5698	00576					west side. Inscribed headstones date from 1690, also a number of chest tombs; large gabled burial vault SE of church. Facing entrance to graveyard, SW of church, altar tomb of Lady Susanna Newenham, date 1754, set in vaulted shelter; burial place of Newenham family of Coolmore house. At centre, St. Mary's C of I church; nave and chancel with spired tower at west end; built in new-Gothic style in 1823 to design of Pain brothers, brass tablet above door. On site of ancient parish church of Carrigaline, described in 1700 as 'above 70foot long... well slated and weel furnished with seats' (Lunham 1909, 169-70); O'Early notes 'detached stone' bearing inscription 'this church was rebuilt in the year of our savior Chrust, 1723'; Smithe (1750, vo. 1 208) described it as 'in decent order'; no visible surface trace. Font dated 1637 inside church.	still in use as graveyard.	
CH8	CO087-038-- Inventory 6163	Recorded monument	Shanbally	Lime Kiln	17555/06461	RMP Inventory	Indicated. In quarry, built against natural slope. Arched recess (H2.4m; Wth 1.98m; D 3m), sloping slabs to rear, stoking hole evident; keystone inscribed 'G.P.B. 1837. Stone-lined funnel almost completely infilled. Not located during this survey (no access and	Indirect: pipe impacting ZAP of monument.	Monitoring of pipeline in vicinity of ZAP for monument

							very overgrown with vegetation).		
CH9	CO087-040--- Inventory 5312	Recorded monument	Shanbally	Enclosure	17528/06387	RMP Inventory Aerial Photograph	Indicated. In pasture, on south-facing slope of E-W ridge overlooking Owenboy river. Depicted on 1842 OS map as hachured D-shaped enclosure; south part of site now levelled. Arc (NW to NE) formed by earthen bank (H 0.85m) with external fosse. Possible second earthen bank (H 0.75m) immediately outside fosse; heavily overgrown and incorporated into field fence system. Interior surface irregular, interfered with; open to south.	Indirect and direct Impact. ZAP impacted by WWTP site and pipeline at this location. Some of pipe route adjacent to extant bank now extant as field boundary	Creation of c.20m buffer zone around monument in order to protect it from inadvertent damage and to maintain integrity of monument in landscape. Berms, trees and fencing should respect buffer zone and be placed outside it. Pipeline to respect buffer zone and should not impinge it.
CH10	CO087-041--- Inventory 6364	Recorded monument	Shanbally	Circular Enclosure	17547/06365	RMP Inventory	Not shown. In pasture, on south-facing slope. Aerial photograph (Bord Gais) shows levelled circular enclosure. No visible surface trace. Due to the photographic evidence and the fact that this is in close proximity to another enclosure it is quite likely that its archaeological remains are	Indirect: pipe impacting ZAP of monument. Adjacent to WWTP site.	Creation of c.20m buffer zone around monument in order to protect it from inadvertent damage and to maintain integrity of

							subsurface.		monument in landscape Pipeline to respect buffer zone and should not impinge it. Berms, trees and fencing should respect buffer zone and be placed outside it.
CH11	CO087-049--- Inventory Not included	Recorded monument	Ballybricken	Possible church	17705/06449	RMP	Not included in inventory. Site not located during inspection.	Indirect: pipe impacting ZAP of monument.	Monitoring of pipeline in vicinity of ZAP for monument
CH12	CO087-054--- Inventory 4271	Recorded monument	Ringaskiddy	Shell midden	17908/00345	RMP Inventory	Not shown. On beach at Curlane Bank. Narrow layer of midden material extends for 30m n-s along shoreline just above high tide mark and measures 0.1m in thickness. Deposit contains cockles, limpets and winkles with some oyster and razor shells. Large scatter of shells (c. 100m E-W) on beach at low tide level.	No Impact of archaeological feature (shell midden) and its ZAP, as it is not intended to undertake intrusive works at this location at present.	. Existing pipe wayleave. No works required at this time. Should work be required in future, suitable mitigation should be put in place.
CH13	CO087-077--- Inventory Not included	Recorded monument	Kilgarvan	Church	17975//06647	RMP Urban Archaeology Survey County Cork	Not included in inventory. No surface trace found during walkover. Located close to harbour in centre of Cobh. No visible trace. Unlocated during	Indirect: pipe impacting ZAP of monument.	Monitoring of pipeline in vicinity of ZAP for monument

							walkover inspection.		
CH14	CO087-078--- Not included	Recorded monument	Kilgarvan	Graveyard	17967/06684	RMP Urban Archaeology Survey County Cork	Not included in inventory. No surface trace found during walkover. Urban Survey records that it was uncovered in 19 th century and its site is now occupied by Cove Male National School.	Indirect: pipe impacting ZAP of monument.	Monitoring of pipeline in vicinity of ZAP for monument
CH15	CO087-079--- Not included	Recorded monument	Kilgarvan	Graveyard	17975/06647	RMP Urban Archaeology Survey County Cork	Not included in inventory. No surface trace found during walkover. Urban Survey records site now occupied by Pearse Square and originally uncovered in 19 th century and recorded by Coleman in 1894.	Indirect: pipe impacting ZAP of monument.	Monitoring of pipeline in vicinity of ZAP for monument
CH16	CO087-097--- Inventory 5140	Recorded monument	Rathanker	Possible Souterrain	17590/06740	RMP Inventory	Not shown. In ringfort (4614). According to Hurse ('subterranean passage or cave was to be seen between forty and fifty years ago. It is now covered with a large flat stone and the soil has grown over it'. No visible surface trace.	Indirect: pipe impacting ZAP of monument	Monitoring of pipeline in vicinity of ZAP for monument
CH17	CO087-107--- Inventory 6361	Recorded monument	Carrigaline East	Possible Souterrain	17506/06287	RMP Inventory	Not shown. Uncovered during building of house c.1977. According to local information consisted of 'stone-lined passage'. Destroyed by foundation trenches. (pers. comm. S. Lane). No trace found during inspection.	Indirect: pipe impacting ZAP of monument. Impact already occurred due to construction of house.	Monitoring of pipeline in vicinity of ZAP for monument

CH18	CO087-109-- Inventory 5871	Recorded monument	Carrignafoy	Battery	18097/06667	RMP Inventory	Indicated. On steep s-facing shore of Great Island with commanding view of entrance to Cork harbour; remains of roughly star-shaped fort later enclosed within rectangular ordnance grounds; known as Cove Fort. Fort built 1743-9 (Brunnicardi 1982,4)	Direct and Indirect: pipe impacting ZAP of monument and some stretches very close to extant portions of the monument.	Monitoring of pipeline in vicinity of ZAP for monument
CH19	CO099-072-- Inventory 3941	Recorded monument	Commeen	<i>Fulacht Fiadh</i> (burnt mound)	17423/06108	RMP Inventory	Not shown. According to local information, <i>fulacht fiadh</i> discovered during reconstruction of rural water scheme. No visible surface trace. Well nearby	Indirect: pipe impacting ZAP of monument	Monitoring of pipeline in vicinity of ZAP for monument
CH27	CO087-010-- inventory 5693 & 5894	Recorded Monument Protected Structure	Ballyvoloon	Church and Graveyard	17960/06785	RMP Inventory PS	Indicated. "Cobh Cemetery". Square graveyard, large collection of inscribed headstones, contains ruins of 17 th church. Many headstones have maritime connection. Lusitania mass grave here in SW corner. Site of ancient parish church called Clonmel.	Indirect: pipe impacting ZAP of monument	Monitoring of pipeline in vicinity of ZAP for monument

Table 5. Archaeological constraints inventory of recorded monuments

5.2 Architectural Constraints Inventory (figs 19-23; Table 6)

The following is the list of all known recorded protected structures (RPS) within the study area. (Excepting Cobh Town.) Its elements have been grouped under CH26 see below due to its complexity.) This study's code is provided as well as the RPS county code for the structure. The importance/legal status of the structure is provided along with the name of the address in which the structure is situated. The site type is the classification designated to the structure in the list of Protected Structure in the Cork County Development Plan 2003, (CCC, as varied). The source of the information provided in the table is given, along with the pertinent points of that source in the final column. The National Inventory of Architectural Heritage (NIAH) was contacted. They informed the writer that they have yet to survey the study area and its vicinity and as such have no records for the study area at present (W. Cumming, NIAH pers comm.). It is important to point out that the NIAH's future work may have a bearing on this study. Full details of all sources used are provided in section 7 of this report.

Constraint study code	Reference (RPS County Code)	Address	Location/ Coordinates	Site Type	Source	Importance/ Legal Status	Information Detail	Type of Impact Predicted	Suggested Mitigation Measure
CH6	00579	Carrigaline Middle	17307/06249	Mill	Cork County Development Plan (as varied)	Protected Structure (and recorded monument)	List of Protected Structures. Also a recorded archaeological monument.	No impact on fabric of structure, pipeline in vicinity of structure.	none
CH7	00576	Carrigaline Middle	17415/06259	St Mary's Church	Cork County Development Plan (as varied)	Protected structure (and recorded monument)	List of Protected Structures. Also a recorded archaeological monument.	No impact on fabric of structure, pipeline in vicinity of structure.	none
CH27	00861	Ballyvoloon	17960/06785	Clonmel Church	County	Protected	List of Protected	No impact on	none

				and graveyard	Development Plan	Structure and recorded monument	Structures. Also a recorded archaeological monument.	fabric of structure, pipeline in vicinity of structure.
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Table 6. Architectural constraints inventory of recorded structures within study area

5.3 Further Potential Archaeological & Architectural Constraints (figs 19-23, Table 7)

Some wayside monuments were noted during the inspection of the study area. These are not formally protected. They might be regarded as being of local interest and so it is suggested that they be protected from inadvertent damage during the construction of the development. The potential architectural constraints detailed in the table below have been included here (although they are not recorded structures at present). Potential architectural features were identified from the walkover inspection only. One “new” unrecorded extant archaeological monument was noted during the walkover CH22. While the WWTP site was walked by the writers, the remainder of the green field pipe locations were not accessible at the time of writing (these were accessed on the aerial photos only). No green field pipe location is near an RMP or a PS. However, it is suggested that all these locations, where new pipelines are been constructed in green field areas are **ARCHAEOLOGICALLY MONITORED**.

Constraint study code	Ref. Nos	Address	Location/ Coordinates	Site Type	Source	Importance/ Legal Status	Information Detail	Type of Impact Predicted	Suggested Mitigation Measure
CH20	none	Ringaskiddy	Within study area, 177180/0643 60	Roadside memorial	Fieldwork	none	Memorial for a death near this location.	Direct Impact: May be inadvertently disturbed during construction.	Suitably protected and fenced off (temporarily) during construction works
CH21	none	Ringaskiddy	Within study area, 176970/0646 59	plaque	Fieldwork	none	Cork Harbour Commissioners commemorative plaque erected in 1980 and bearing the inscription 'This plaque acknowledges the assistance of the European Regional Development Fund in the development of the port of Cork. June 1980'. It is a 2.40m high brick structure.	Direct Impact: May be inadvertently disturbed during construction.	Suitably protected and fenced off (temporarily) during construction works
CH22	none	Ringmeen,	Within study	Limekiln	Fieldwork	None	Unusual occurrence of	Indirect impact:	Suitably protected

		(Whitepoint)	area, 178520/0657 20		OS map analysis		an unrecorded kiln in Co. Cork. Rynne in his publications does not note it. Associated with a local quarry to west of monument. Marked on the first edition 6" map with a limekiln symbol (circle/ring with dot). In very good condition.	adjacent to location of pipes	and fenced off (temporarily) during construction works Archaeological monitoring in vicinity of monument.
CH23	None	Ballyfoulool "Strawhill"	075400/ 065100	Railway Embankmen t	Fieldwork OS map analysis	None	Railway embankment extant relating to the Great southern railway which ran from Carrigaline to Crosshaven. Closed in the 1930s. Low possibility that some remains of Raffeen Mills may be present subsurface at this location also.	Indirect: impact adjacent to pumping station	Archaeological monitoring of construction works (due to presence of modern fill at location of station).
CH24	None	Kilnaglery/ Commeen	073525/ 061515	The Dandy Bridge	Fieldwork OS map analysis	None	Indicated as Ford and crossing point and bridge. Origin of name unknown. Bridge single span semi-circular headed arch in mortared stone. Parapets at either side of roadway, mortared stone. Very overgrown. Stone paving noted in water to north side of bridge, possible original fording	Direct and Indirect impact: adjacent to pipe location. Route of pipe may traverse bridge	Archaeological monitoring of construction works. Protection of bridge in case of inadvertent damage should it be required (sandbagging, scaffolding or suchlike).

							paving. Modern pipes on northern side of bridge.		
CH25	None	Kilnaglery	074255/ 062100	Bridge/ Railway Embankment	Fieldwork OS map analysis	None	Railway embankment extant relating to the Great southern railway which ran from Carrigaline to Crosshaven. Closed in the 1930s. Kilnaglery bridge to south. Marked on earlier editions of maps. Modern road now traverse bridge which appears modern (though may be older and repaired).	Indirect impact: adjacent to outfall of pipe	Archaeological monitoring in vicinity of monument
CH26	None	Historic Town	179750/0664 70	Historic Town	Fieldwork OS map and documentary analysis	None (as a historic entity)	Cobh town is a complex and very important cultural heritage location. It is not designated as an entity in its own right but for the purposes of this study has been allocated a CH number. This CH number incorporates the contents of the Cobh Development Plan (CTC 2005) including its PS list and so they have not been described individually. At the end of the 18 th century Cobh was	Direct and indirect impact: Pumping stations and pipe locations in historic town	Archaeological monitoring of all pipe routes within Urban district of Cobh. Sympathetic design of major pumping station at West Beach. Suitable Screening of all works during construction phase so as not to detract from the historic integrity of the town until they are made good.

						<p>described as a small fishing village consisting of a few scattered houses. Its subsequent rise arose from its convenient island location for shipping in Cork Harbour. It also benefited from the erection of Camden and Carlisle forts and by the construction of an artillery barracks on Spike Island to the south. It was a British naval base until 1937 and was the principal American naval base in Europe during WW1. In 1838 the Sirius sailed from here- the first steamer to cross the Atlantic. In the 19th century Cobh was a "winter resort" and in 1894 Queen Victoria visited when it was temporarily called "Queenstown". The ill-fated Titanic stopped at Cobh before it continued its maiden voyage to America (Zajac <i>et al</i>, Urban Survey 1995)</p>	<p>Archaeological testing in advance of construction of pumping stations at Carrigaloe and West Beach.</p>
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Table 7. Further potential architectural constraints within study area



Figure 19. Aerial photo showing CH locations along pipeline routes in the Monkstown area (north to top not to scale, for indication only)



Figure 20. Aerial photo with CH locations in Cobh and environs (north to top not to scale, for indication only)

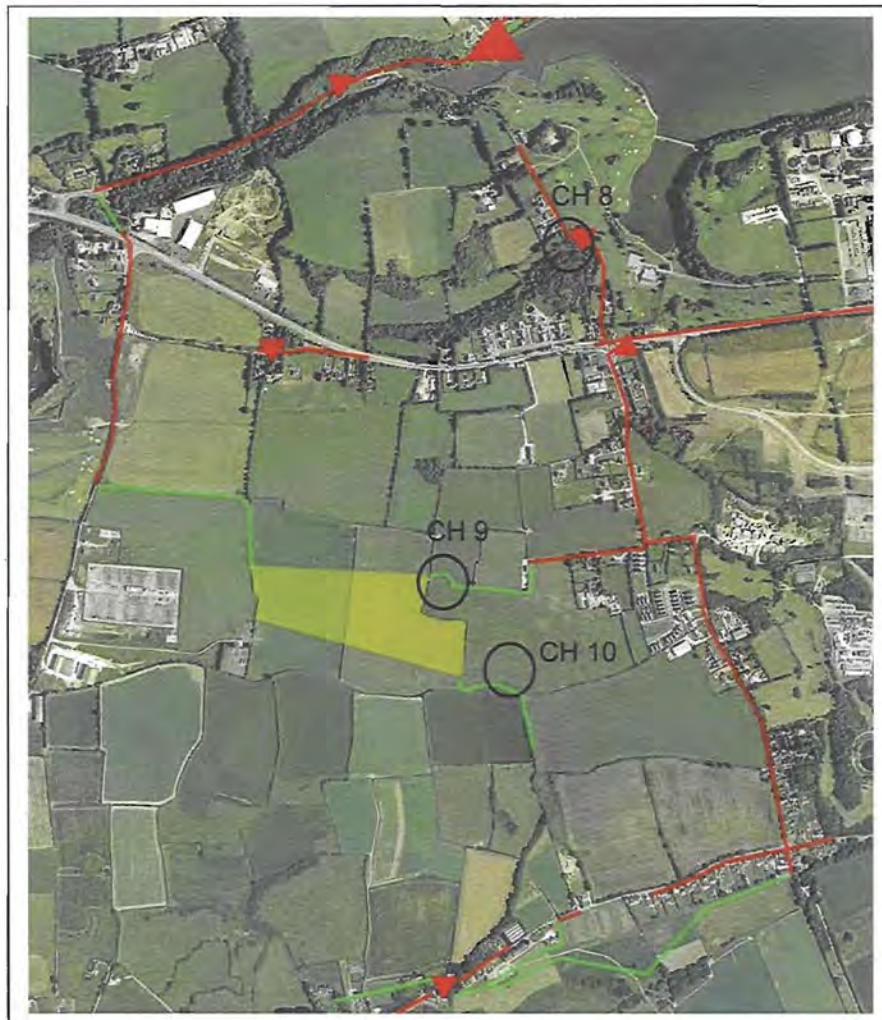


Figure 21. Aerial photo showing CH locations along pipeline routes in the WWIP site area (in yellow) (north to top not to scale, for indication only)



Figure 22. Aerial photo showing CH locations along pipeline routes in the Ringaskiddy area (north to top not to scale, for indication only)



Figure 23. Aerial photo showing CH locations along pipeline routes in the Carrigaline area (north to top not to scale, for indication only)

6. Discussion & Overview

It is clear from this study that the landscape that the proposed development is located is rich in cultural heritage elements from the earliest times to the present. Perhaps the most important of those is that of Cobh Town itself CH26. Due to its historic past and its protected structures (which are seen as individual elements) it was decided that in the case of this study it should be seen as a cohesive entity. This ethos is echoed in the town's Development Plan (CTC 2005). Most of the proposed development is underground pipe work, so while it is predicted to be visible when construction is taking place, in the long term, the visual impact should not be permanent. Major pumping stations will have a visual impact, particularly the one proposed for West Beach Cobh. This should be designed sensitively with its central location borne in mind, among all the historic structures. The other stations might also be suitably screened and their construction either/or archaeologically test trenched or monitored. The following is an overview of the results of the study.

6.1 Cultural Heritage (Table 8)

Constraint Study Code	Townland	Monument Type	Status
CH1	Rathanker	Ringfort	Recorded, RMP
CH2	Ballywilliam	Holy Well	Recorded, RMP
CH3	Parkgarriff	Ringfort	Recorded, RMP
CH4	Ballyfouloo	Holy Well	Recorded, RMP
CH5	Monkstown (Castlefarm)	Lime Kiln	Recorded, RMP
CH6	Carrigaline Middle	Mill	Recorded, RMP, RPS
CH7	Carrigaline Middle	Church & Graveyard	Recorded, RMP, RPS
CH8	Shanbally	Lime Kiln	Recorded, RMP
CH9	Shanbally	Enclosure	Recorded, RMP
CH10	Shanbally	Circular Enclosure	Recorded, RMP
CH11	Ballybricken	Possible church	Recorded, RMP
CH12	Ringaskiddy	Shell Midden	Recorded, RMP (no works proposed here at present)
CH13	Kilgarvan	Church	Recorded, RMP
CH14	Kilgarvan	Graveyard	Recorded, RMP
CH15	Kilgarvan	Graveyard	Recorded, RMP
CH16	Rathanker	Possible souterrain	Recorded, RMP
CH17	Carrigaline East	Possible souterrain	Recorded, RMP
CH18	Carrignafof	Battery	Recorded, RMP

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CH19	Commeen	Fulacht fiadh	Recorded, RMP
CH20	Ringaskiddy	Memorial	Unrecorded
CH21	Ringaskiddy	Plaque	Unrecorded
CH22	Ringmeen (Whitepoint)	Limekiln	Unrecorded
CH23	Ballyfouloo "Strawhall"	Railway embankment (and perhaps remains of Raffeen Mills)	Unrecorded
CH24	Kilnaglery/Commeen	The Dandy Bridge	Unrecorded
CH25	Kilnaglery	Railway embankment (and possibly Kilnaglery bridge)	Unrecorded
CH26	Cobh Urban District	Cobh Historic Town	Unrecorded (as a historic entity)
CH27	Ballyvoloon	Church and Graveyard	Recorded RMP, RPS

Table 8. Summary of Cultural Heritage Constraints

6.2 Other Designations (Fig. 24, Table 9)

This report is primarily concerned with the cultural heritage of the subject site proposed for the scheme. (RMP and PS). However, it is important to note that the study area is variously designated in the County Development Plan 2003. The mapping used dates to April 2006. It was obtained from the Cork County Council website. The other designations of the study area are as follows (correct at the time of writing and not an exhaustive list):

Location in study area	Designation	Code	Cork County Development Plan location (CCC 2006)
R610/N28 (Passage West/ Monkstown/ Ringaskiddy)	Scenic Route	A54	Map 9
R624 (Cobh Road)	Scenic Route	A53	Map 9
R612 (Carrigaline to Crosshaven)	Scenic Route	A56	Map 15
N and NW of Passage West, Along R610 Monkstown, Monkstown, portion N of Monkstown	Scenic Landscape	N/a	Map 9
Great island, north of Cobh along R624	Scenic Landscape	N/a	Map 9
N and S of Owenboy River, Carrigaline	Scenic Landscape	N/a	Map 15
Owenboy River Estuary	Nature Conservation	PNHA-1990	Map 15
Monkstown Creek	Nature Conservation	PNHA-1979	Map 9
Cuskinny Bay (E of Cobh)	Nature Conservation	PNHA-1987	Map 9
Cork Harbour	Special Protection Area		Section 7.2.8 in <i>Carrigaline Electoral Area Local Area Plan</i> (CCC 2005 and CCC as varied)

Table 9. Other Designations in study area (after CCC 2006 with additions)

Cork County Council also has adopted a county Heritage Plan 2005-2010, (CCC 2005) which has several objectives in relation to heritage in the County. None of the objectives are specific

to the study area, however, these objectives should be borne in mind. It was consulted as part of this study. This Plan is available from www.corkcoco.ie.

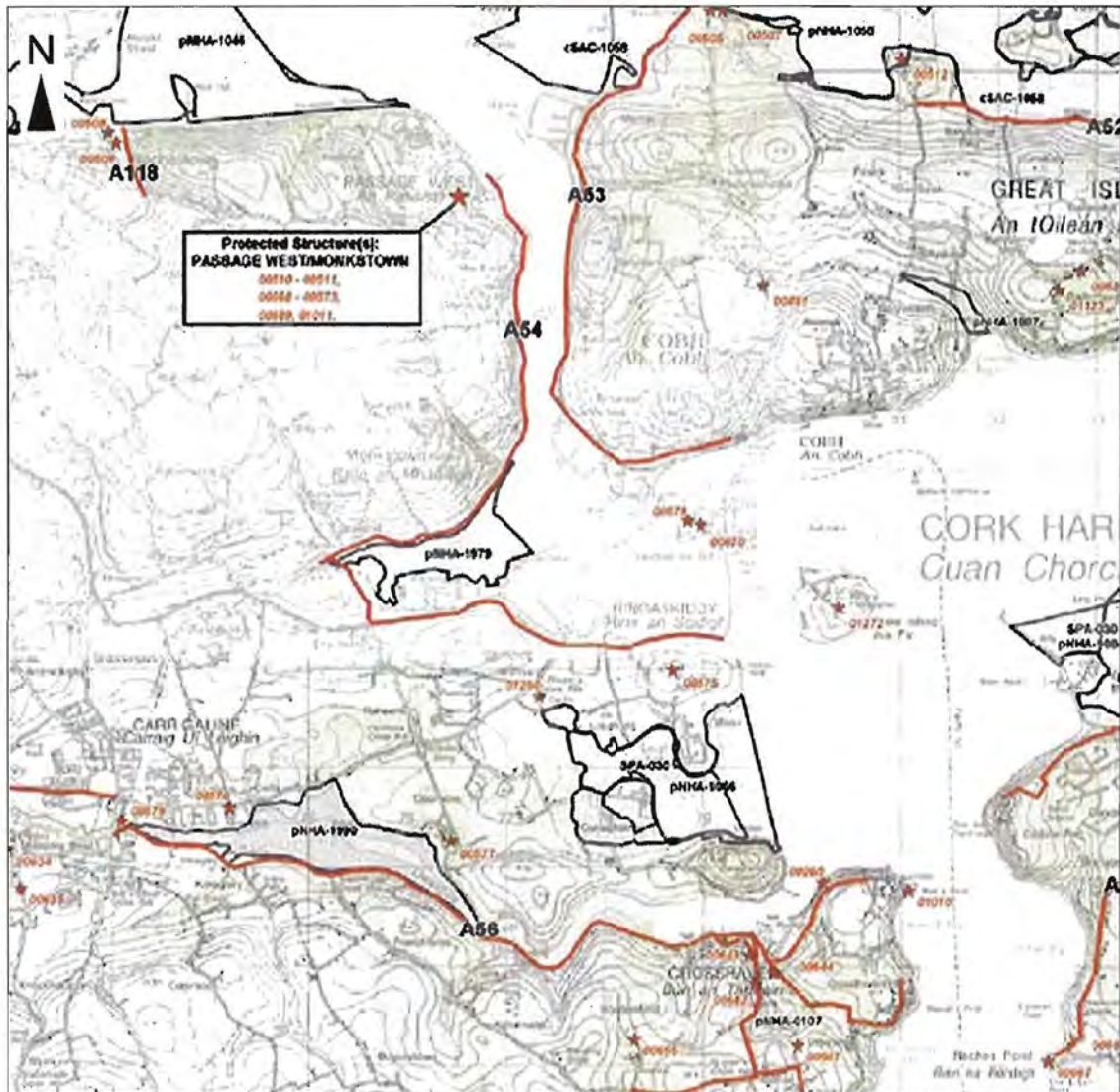


Figure 24. Other designations in study area (after CCC 2006 with additions)

7. Conclusions & Suggested Mitigation Summary

Twenty-seven cultural heritage constraints have been identified as part of this study. Some are archaeological monuments, protected structures or both. One new archaeological monument, a limekiln was noted during the study. The town of Cobh was allocated a cultural heritage number due to its importance within the study area. The cultural heritage features highlight the importance of this locality from prehistory to the present day. Specific mitigation measures have been suggested in section 5 of this report. Underwater/intertidal areas (marked in blue) have been considered separately in the ADCO report in section 10. Further general mitigation measures are provided below.

7.1 Predicted Impacts

7.1.1. "Do-Nothing" Scenario

If nothing is done at the locations described in this report then the extant and possible sub-surface cultural heritage features including archaeology, will remain as they are at present.

7.1.2 "Worst Case" Scenario

If no cultural mitigation measures are put in place it is predicted that it is possible that cultural heritage features including archaeology and artefacts, which may lie sub-surface may be destroyed or damaged without a suitable record being made.

7.1.3 Predicted Impact Scenario

Indirect impacts are predicted for a number of CH sites along the route. This means that the ZAP for a number of recorded sites is predicted to be impacted by the current route of the pipeline. ZAP are indicative zones around a monument only. Visual impact in relation to

pipelines is predicted not to be permanent as they are to be buried. Pumping stations and WWTP are predicted to have permanent visual impacts on a number of CH sites. Suitable screening is suggested in these cases. Specific impact information is detailed for each CH site in tables 5-7 above (column headed "Type of Impact Predicted" in each case) and so is not repeated here. A summary is provided in Table 10.

7.1.4 Predicted Residual Impacts

It is anticipated that in the event of the mitigation measures as detailed in this report being implemented in accordance with the requirements of the National Monuments Section (NMS) and the National Museum of Ireland (NMI) there will be no residual impacts arising from the proposed development.

7.2 Suggested Mitigation

As detailed above, some indirect impacts are predicted on the cultural heritage of the area. In order to mitigate the predicted impacts, mitigation has been suggested. Each CH site has specific mitigation suggested in tables 5-7 (column headed “Suggested Mitigation Measure”) and so has not been repeated here. Pre-construction archaeological testing has been suggested particularly for the WWTP site and the pumping stations, with varying levels of archaeological monitoring throughout the scheme. Suitable screening is suggested for pumping stations and WWTP to alleviate any negative visual impacts that might occur. The suggested mitigation measures in this report are those which have been used previously on similar projects. However, it is important to note that these mitigation measures are suggestions and that it is the remit of the NMS of the DoEHLG in consultation with the NMI that recommends and ratifies any archaeological mitigation required. As such, those bodies may recommend measures that have not been included here. Table 10 provides a summary of the suggested mitigation for the project.

General predicted impact Summary	Mitigation measure Summary
Predicted impacts on specific CH sites 1-27 detailed in section 5	Refer to section 5 for suggested specific measure
Impact of green field pipe routes on unrecorded subsurface archaeology or cultural heritage	Field walking of ALL green field areas when accessible. Archaeological test trenching and/or monitoring of pipe routes
Impact of WWTP	Archaeological testing in advance of construction
Impact of pipe routes where it cuts boundaries such as barony/townland boundaries	Archaeological test trenching of locations where this occurs
Impact of pipe routes within zones for CH sites	Archaeological monitoring of these locations
Impact of pipe routes along roads outside zones for CH sites	Archaeological Inspections of works at these locations
Impact of major pumping station locations: Monkstown, Raffeen/Strawhill, West Beach and Carrigaloe	Archaeological testing and/or monitoring of these locations
Visual Impact of pipeline routes	Suitable screening during construction especially in CH26
Visual Impact of major pumping stations	Suitable screening to minimise visual impact on cultural heritage. In particular, sensitive design of West Beach pumping station in line with provisions of Cobh Development Plan (CTC 2005), due to its highly visible location with the cultural heritage town of Cobh.
Predicted Impacts on underwater and intertidal zones (as indicated by blue lines on mapping)	Refer to specific measures as set out in ADCO report section 10 of this report.
Scale of proposed development	Due to scale of proposed development it is suggested that a Project Archaeologist be appointed to the project to oversee and manage its cultural heritage dimension during construction by liaising directly with main contractor (as has been done in similar projects previously)

Table 10. Mitigation Summary

7.3 Non-Technical Summary

7.3.1 Scope of Study

This is a desk based and fieldwork study to assess the potential impact of the proposed development on the potential archaeological and cultural heritage significance of the site. Aegis Archaeology Limited undertook the terrestrial dimension of the study and ADCO Limited was contracted to undertake the underwater and intertidal dimension.

7.3.2 Method of Study

The site was visited on three occasions by two qualified archaeologists and recorded in the proper fashion (as per published guidelines in the compilation of EIS). A desk based study was undertaken which consulted all immediately available material relating to the site, including review of archaeological works, National Museum files, archaeological information held and published by the Archaeological Survey of Ireland, Cork County Development Plans, national Inventory of Architectural Heritage was contacted, though this body has yet to undertake fieldwork at this location (their future work may have a bearing on this project presently), local histories, mapping and aerial photos.

An underwater and intertidal archaeological survey of two pipeline impact corridors was undertaken. Systematic visual inspection of the sub-tidal seabed and intertidal/ foreshore areas surrounding the proposed impacts did not reveal any material or features of archaeological significance. The work was carried out under licence from the DEHLG.

7.3.3 Existing Environment

The environment at present is a mixture of landscapes which include roadways in urban centres, roadways in countryside, green field locations, intertidal and underwater locations. For the purposes of the study the area was subdivided into five areas which were assessed in turn. They are: Passage West, Monkstown, Raffeen/Strawhill; Carrigaline; Shanbally (WWTP); Ringaskiddy and Cobh and environs. The underwater and intertidal dimension was undertaken by ADCO and is detailed in their report (section 10 of this report).

Twenty-seven cultural heritage constraints have been identified as part of this study. Some are archaeological monuments, protected structures or both. One new archaeological monument, a limekiln was noted during the study. The town of Cobh was allocated a cultural heritage number due to its importance within the study area. The cultural heritage features highlight the importance of this locality from prehistory to the present day.

The underwater assessment was undertaken along the works corridor identified for the proposed marine pipeline, crossing between Monkstown and Cobh (River Lee Estuary), and the inter-tidal survey was carried out across the route of the proposed foreshore pipeline at Carrigaline (north side of Owenboy River).

7.3.4 Impacts of the Proposed Development

The landscape is rich in cultural heritage elements from the earliest times to the present. Perhaps the most important of those is that of Cobh Town itself. Due to its historic past and its protected structures (which are seen as individual elements) it was decided that in the case of this study it should be seen as a cohesive entity. It is important to note that the National Inventory of Architectural Heritage have yet to undertake fieldwork in this area and it is likely that their work will produce further protected structures, which may have a bearing on this project. This "entity" ethos is echoed in the town's Development Plan. Most of the proposed development is underground pipe work, so while it is predicted to be visible when construction is taking place, in the long term, the visual impact should not be permanent.

Major pumping stations will have a visual impact, particularly the one proposed for West Beach Cobh. This should be designed sensitively with its central location borne in mind, among all the historic structures. The other stations might also be suitably screened and their construction either/or archaeologically test trenched or monitored.

A number of archaeological sites are located in the region however no archaeological sites are predicted to be directly impacted by the proposed development site. The WWTP site has a ring-fort monument located northeast of the site, with a possible second, further eastwards. The buffer zones around these sites should be respected and pipe work should be outside these areas.

There are no documented occurrences of any archaeologically significant items or sites on the proposed development site. However, it is possible that features and artefacts of interest may be unearthed during the construction works. The loss of such artefacts would be a significant impact.

It is anticipated that in the event of the mitigation measures as detailed in this report being implemented in accordance with the requirements of the National Monuments Section (NMS) and the National Museum of Ireland (NMI) there will be no residual impacts arising from the proposed development.

7.3.5 Conclusions and Suggested Mitigation

The subject site is within an area rich in cultural heritage and archaeology. Ground disturbance works associated with the construction of the proposed development may have an impact on the western portion of the enclosure, adjacent to the site boundary of the WWTP site. In order to be proactive, Archaeological testing works are suggested at the WWTP site and pumping stations locations in order to undertake some archaeological works at pre-construction stage. Pipe locations along roads may reveal features of archaeological interest. As such, monitoring by a fully qualified archaeologist is recommended, to reduce potential impacts.

It is recommended that archaeological monitoring of riverbed/ seabed disturbances during construction be undertaken, with the proviso to resolve fully any archaeological material observed at that point. Archaeological Monitoring of the proposed foreshore pipeline is not deemed necessary.

Several methods of archaeological mitigation have been suggested here, as has been used in similar projects. It is the remit of the National Monuments Section of the Dept of the Environment, Heritage and Local Government, to legally recommend any one or a combination of these mitigation measures and perhaps to make recommendations that have not been suggested above (sometimes through the local authority).

8. Signing-Off Statement

Archaeological Firm: ÆGIS ARCHAEOLOGY LIMITED

Writers: Tracy Collins MA MIAI and Avril Hayes MA MIAI
ÆGIS Archaeology Limited
32 Nicholas Street,
King's Island,
Limerick

Client: Mott MacDonald Pettit,
5 Eastgate Avenue
Eastgate,
Co. Cork

Digitally signed by Tracy Collins
DN: cn=Tracy Collins, c=IE, o=Aegis Archaeology, ou=Director,
email=info@aegisarc.com
Date: 2008.01.08 14:37:48 Z

Signed: _____
For ÆGIS ARCHAEOLOGY LIMITED

Dated: December 2007

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10. Appendix: ADCO Report

The following report details the archaeological assessment of the intertidal/ underwater locations in the study areas at the Owenboy River and the ferry terminal crossing between Passage West and Carrigaloe. Predicted impacts and suggested mitigation is provided.