

## **3 PROJECT DESCRIPTION AND ALTERNATIVES**

### **3.1 Introduction**

The applicant proposes to construct facilities at both Greenore in Co. Louth and Greencastle in Co. Down to allow operation of a vehicular ferry across the mouth of Carlingford Lough.

The proposed works include:

- a reinforced concrete slipway with a narrow jetty along one side to facilitate berthing and tying up of vessels overnight, accessed from a high level concrete pier across the upper beach at Greencastle with a parking and queuing area constructed in the adjacent field.
- a reinforced concrete slipway at Greenore with vertical fender piles on one side to absorb berthing forces from the ferry with a parking and queuing area on land
- floating navigational marks anchored to the bed of the Lough and laid at the edges of the navigable channel to delineate appropriate channel boundaries or to mark shallow rock outcrops and provide for safety of navigation
- upgrade and widening to parts of the Greencastle Pier Road within the existing verges to provide a target width of 5.5m where possible with additional passing bays provided wherever feasible.

This chapter outlines in detail the proposed development, the sequencing of construction, how the ferry will operate and the main alternatives considered as part of the design process.

### **3.2 Site locations**

#### **3.2.1 Greencastle Terminal**

The site at Greencastle is accessed from a field on the southern side of Greencastle Pier Road approximately 600m south-east of Greencastle Point and lies immediately adjacent to the coastline. The field is to the east of the main group of houses comprising Greencastle village and thus incoming and outgoing traffic will not have to travel through the village to access the ferry development.

The level of the field is approximately +4.0m OD along the coastline and the proposed jetty reaching out towards the water will be maintained initially at this level to provide sufficient clearance above the beach and allow access directly along the beach for ongoing pedestrian use.

The field is approx 1.9 acres in total though less than half of the field will be utilised as a parking and queuing area and for an administration office (approx 0.8 acres utilised). The remainder of the field will be fenced off and retained as agricultural land with access through the existing field gate at the north-western end.

Access to the site will be a direct entrance off the Greencastle Pier Road and sufficient length of hedgerow will be removed and set back to provide adequate sight lines for traffic re-joining the road.

There will be no security fencing around the perimeter of the site. Rather, native hedging and stock-proof fencing will be maintained or provided to demarcate the site boundary. A horizontal security barrier, in lieu of a gate, will be provided at the site entrance but it is anticipated that the barrier may substantially remain open with the site maintained as accessible as possible. Should vandalism or unauthorised access prove problematic, then the barrier would be closed overnight.

Please refer to drawing IBM0358-201 for full details.



Plate 3.1: Site Outline, Greencastle



Plate 3.2: Site Overview, Greencastle

### 3.2.2 Greenore Terminal

The site at Greenore lies at Greenore Point to the east of the current commercial quay. It is approx 0.6 acres in total and is accessed through the existing Greenore Port entrance gates. Given the desire to maintain free flow of traffic to both the Port and the Ferry Terminal, an agreement has been reached with Greenore Port to relocate their perimeter gates backwards by approximately 15m from their current location. As shown on the layout drawings, this provides a suitable access to the ferry compound and maintains a separate entrance gate for port traffic. The opportunity has been taken to relocate the Port's weighbridge into a central lane so as to allow ease of operation for incoming and outgoing traffic. Traffic entering the Port or the ferry terminal will be given priority over exiting traffic so as to clear the adjacent roadway of incoming vehicles at the earliest opportunity. The box junction in front of the proposed port gates will be hatched yellow to indicate traffic crossing and the particular need for ferry traffic to take care when entering and leaving. Given the infrequent nature of traffic leaving the ferry terminal (generally every hour), it is proposed that the port traffic be given priority at this box junction.

The site includes a warehouse building of 34m long x 16m wide which will be maintained on its current footprint. However, the gable ends will be partially removed to allow a flow of traffic through the building to make best use of available queuing and turning space.

The proposed site lies immediately to the north of a Louth County Council car-park which is provided for visitors to the beach and coastline. This car-park will be maintained as existing and pedestrian access to the ferry terminal will be provided along the shore by using low level pedestrian bollards.

There will be no security fencing around the perimeter of the ferry site other than adjacent to the Port boundary to maintain the security of Greenore Port. A horizontal security barrier, in lieu of a gate, will be provided at the site entrance but it is anticipated that the barrier may substantially remain open with the ferry site maintained as accessible as possible, unless security or vandalism issues arise, in which case the barrier may be closed at night. The eastern and southern exposure of the Ferry terminal will remain open to pedestrian access and available for fishermen to gain access to habitual fishing spots at Greenore Point.

Please refer to drawing IBM0358-101 for details.

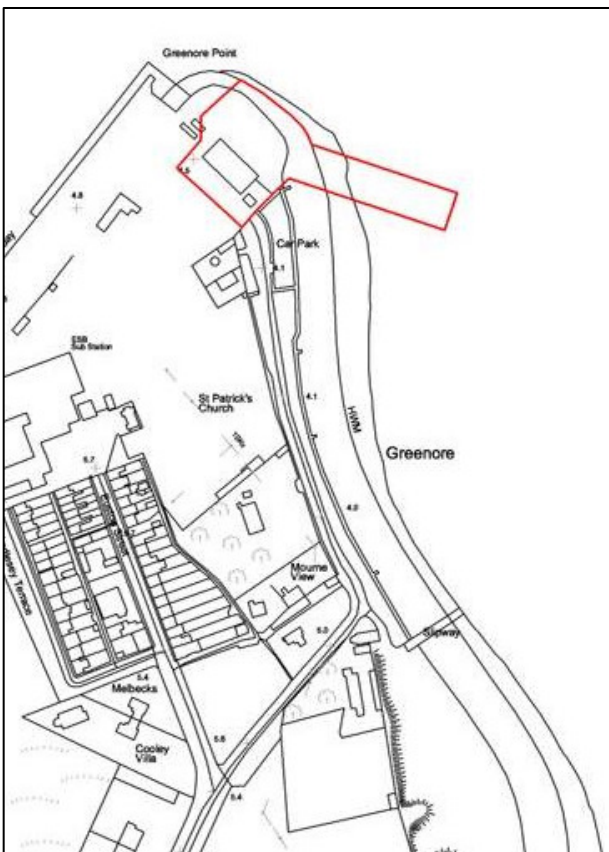


Plate 3.3: Site Outline, Greenore



Plate 3.4: Site Overview, Greenore



### 3.2.3 Ferry Route Across Carlingford Lough

It is proposed that the ferry will operate across Carlingford Lough in the narrow neck of the Lough between Greencastle and Greenore and approximately 3km from the open sea. The presence of the Limestone Rocks at the mouth of Carlingford Lough shields the inner part of the Lough from the most severe waves penetrating into the Lough from the Irish Sea. Their shallow nature and rocky outcrops induce wave breaking and thus wave absorption of the largest waves and provide shelter to vessels operating within the Lough.

Green Island with its surrounding and adjacent intertidal rocky outcrops also provides physical shelter to the Greencastle shoreline but also presents an obstacle to the direct path of the ferry operation across the Lough. Consequently, the ferry will be required to skirt around Green Island and also to avoid straying too far north towards Earl Rock. The main navigable channel in the Lough running towards Warrenpoint is located on the western side of the Lough near Greenore with a stated dredged depth of 5.9m below Chart Datum though natural depths of up to 20m CD are commonly encountered in this vicinity. However, shallow intertidal rocks are also noted and annotated on the Admiralty Chart as Halpin Rock and Frazer Rock with other shallows left un-named. Any proposed ferry route will avoid passing in close proximity to these shallows to maintain safety of navigation.

The preferred route for the ferry operation near the Greencastle side shall be towards the south of Green Island avoiding the area to the north and north-east where the majority of small pleasure craft and pilot boats are moored. This preferred route thus avoids potential for the ferry to weave around current moorings and maintains ferry wash away from moorings as far as possible. It is proposed that if any current moorings obstruct the optimum navigation of the ferry, that these moorings be lifted and re-laid or new moorings positioned in consultation with the boat owner. Based on the current layout of moorings, we are aware of only one boat mooring that may have to be re-positioned in this way near the Greencastle shore.

The preferred route for the ferry operation approaching Greenore shall use either the main dredged channel (depth -5.9m CD) or the more westerly route skirting the shoreline with water depths of typically -12 to -16m CD.

The vessel operation and safety of navigation have been assessed by an experienced mariner, familiar with the type of ferry vessels proposed for operation and experienced in piloting ferry vessels in exposed estuaries. This experienced pilot has visited the Lough to view the proposed sites where the ferry will operate from and has assessed the operational aspects of the ferry across Carlingford Lough. He has confirmed that the proposed locations for slipways and berthing piles on each shore and that the proposed route across Carlingford Lough are suitable for the safe operation of a vehicular ferry. Notwithstanding, it is anticipated that the ferry operation will be subject to cancellation on rare occasions, being weather dependent in this exposed estuary location. Both Greenore Port and Warrenpoint Harbour may be utilised as refuge berths to provide relief from severe weather exposure in the rare event that conditions become untenable for the ferry to berth at Greencastle or Greenore ferry terminals. A letter of support from this experienced pilot is included at Appendix 3.1.

It is noted that local mariners, experienced in the exposure conditions of the Lough, have also commented that the berthing locations are suitable for safe ferry operation and that the preferred route will provide a suitable and safe navigational route between terminals in most weather conditions.

It is planned that no major scheduled maintenance will be carried to the ferry at Greenore or Greencastle.

Regarding, the safety of operation of the ferry, its collision assessment, emergency response plan and oil spill contingency plan will be included as part of the Foreshore and Marine Licence applications.

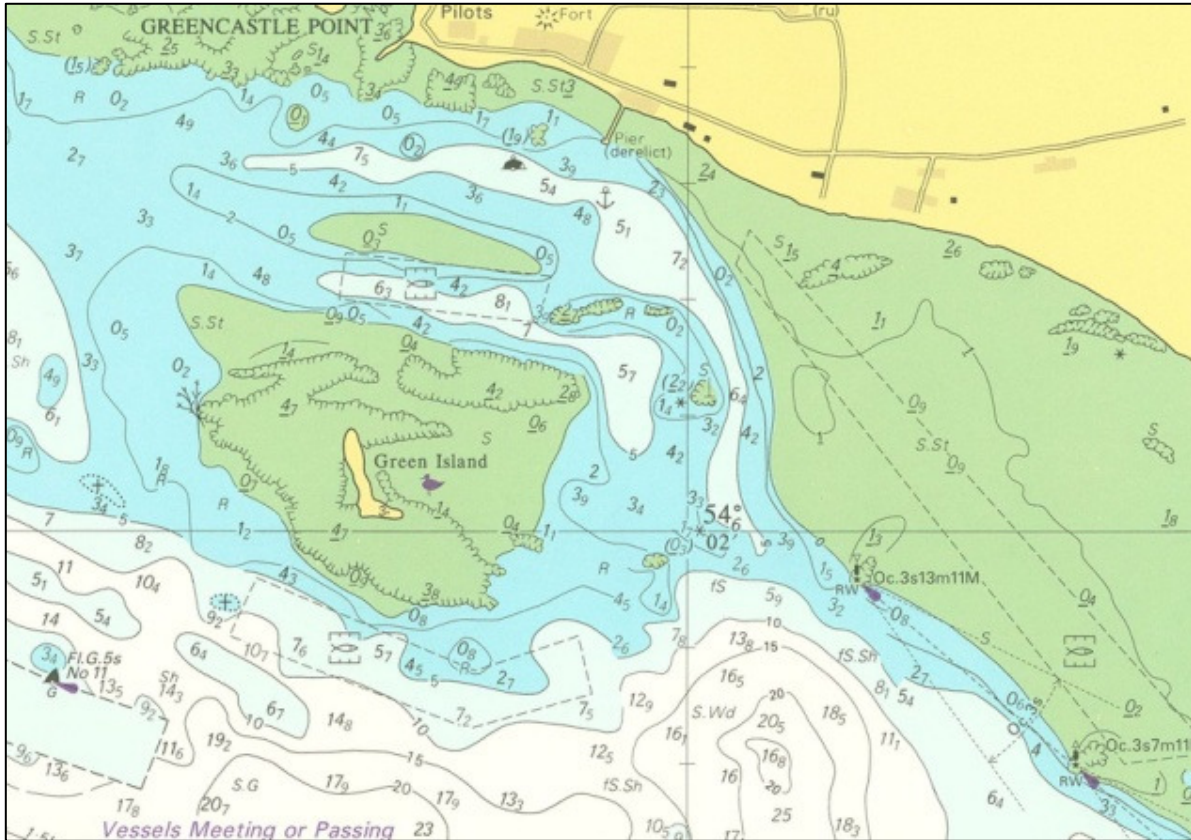


Plate 3.5: Admiralty Map Extract, Greencastle

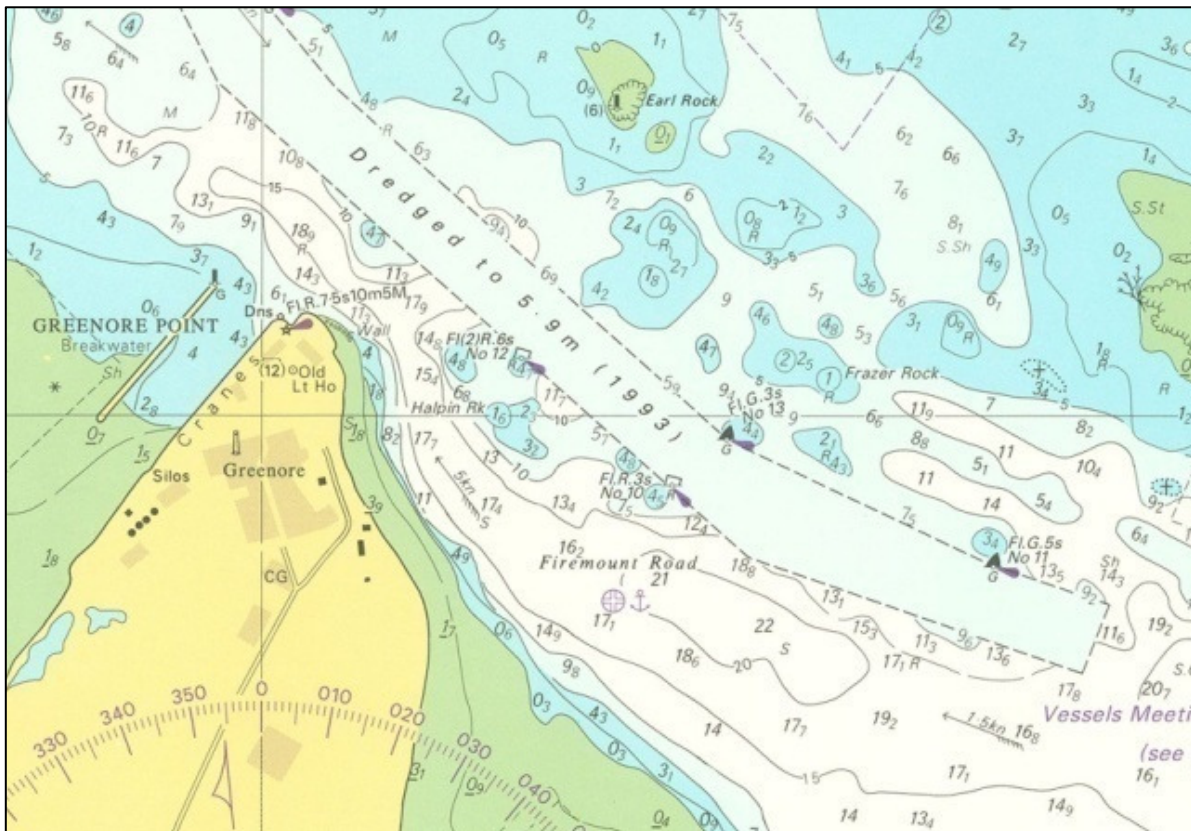


Plate 3.6: Admiralty Map Extract, Greenore

### 3.3 Proposed works

#### 3.3.1 Greencastle Hardstanding, Pier and Slipway

At Greencastle the key elements comprise: (please refer to drawing IBM0358-210)

- a suspended concrete pier of approx 58m long by 10m wide to carry traffic over the upper beach zone constructed from vertical steel tubular piles and a suspended concrete deck at high level. Access along the beach will be maintained beneath this access pier. Safety barriers will be erected along each side of the pier. Approx 10 steel tubular piles will be used in the approach deck over the beach.
- a slipway of approx 70m long by 15m wide at approximately 1:9 gradient to allow a double ended car ferry to drop its vehicular ramp and permit access for through traffic. The slipway will “point” south-westwards and will also be constructed from vertical tubular piles supporting a suspended concrete deck to minimise disturbance of water flows and minimise impact on the adjacent beach. Approx 30 steel tubular piles will be used to support the suspended slipway slab to maintain the open flow beneath the deck.
- approx 12 vertical tubular piles of approx 1219mm diameter driven into the seabed on the southern side of the slipway with 500mm wide x 500mm breadth rubber fenders mounted vertically on the berthing side. These piles act as a guide for the vessel approaching the ramp and support a steel walkway of 1.2m wide at 1.8m above high water mark to allow access for tying up overnight to bollards mounted on top of each pile. Both fenders and piles will be black in colour. The most seaward pile will have a single navigation light mounted approximately 5.3m above high water level.
- a small ancillary portacabin to be used for ticket sales for the vehicular ferry and toilet facilities. The toilet waste will be diverted through an underground self contained secondary treatment plant and subsequently to a percolation area using herringbone drainage.
- a hardstanding area to be used as an off-road queuing area of approx 2,300m<sup>2</sup> using a paved surface with drainage provision through gullies and diverted through an oil interceptor and subsequently through a percolation area using herringbone drainage. Thus no drainage outfalls are proposed in these works
- any topsoil removed from the hardstanding area will be distributed within the remaining field boundary and re-seeded with grass or landscaped and planted with native shrubs around the perimeter hedgerows.
- Lighting columns of 8m height with directional light fittings to minimise light pollution spreading outside the site will be erected around the boundary of the hardstanding area as shown on accompanying drawings.

#### 3.3.2 Greenore Hardstanding and Slipway

The key elements at Greenore comprise: (please refer to drawing IBM0358-110)

- a concrete slipway at approximately 1:9 gradient and 60m long to allow a double ended car ferry to drop its vehicular ramp and permit access for through traffic. The slipway will “point” south-eastwards and will be bounded on the three outer sides by a sheet piled wall to ensure stability and retain the fill within. The top surface will comprise a reinforced concrete slab.
- a series of seven vertical tubular piles of approx 1219mm diameter driven into the seabed on the southern side of the slipway with 500mm wide x 500mm breadth fenders mounted vertically on the berthing side to act as a guide for the vessel approaching the ramp. Both fenders and piles will be black in colour. The most seaward pile will have a single navigation light mounted 5.3m above high water level. There will be no walkway or bollards along the berthing face at Greenore at the ferry will simply berth on the slipway and not tie up. In the event of an emergency, mooring ropes may be slung around the fender piles to hold the ferry at the Greenore slipway.
- a small ancillary portacabin to be used for ticket sales for the vehicular ferry and toilet facilities. The toilet waste will be diverted through an underground self contained secondary treatment plant and subsequently to a percolation area using herringbone drainage.
- a hardstanding area will be created at similar levels as exist at present over Greenore Point using a paved surface to be used as an off-road queuing area for traffic of approx 1,900m<sup>2</sup>. The drainage will be collected via gullies and diverted through an oil interceptor and subsequently through a percolation area using herringbone drainage. Thus no drainage outfalls are proposed in these works. The seaward perimeter will have a footpath and kerbing added along the top of the existing rock armour to facilitate pedestrians along the seafront and improve access for fishing stands.



- the gable ends of the existing warehouse building at Greenore Point will be demolished to allow improved traffic flow entering the site and direct them to form a queue at the northern end of the site. The concrete slab of approx 540m<sup>2</sup> within the warehouse will be retained. New bracing of the gable frames at each end of the building will be required to ensure the stability of the portal framed building and a combination of steel 'X' bracing and partial blockwork walls will be used to provide this stability.
- the existing gates, security hut for the Port and its weighbridge will be demolished and relocated further back into the port area to facilitate the new entrance configuration. The Port entrance gates will be pushed back by 15m and comprise 3 new palisade gates to allow incoming, outgoing and weighbridge traffic.
- the palisade fencing at the northern end of the Louth Co council car-park will be removed to allow pedestrian access from the car-park into the ferry terminal. This boundary will be demarcated by pedestrian bollards located approximately 1.2m apart. The existing port boundary wall at the northern end of the council car park will be retained.
- The existing 20m high lighting column near the southern end of the warehouse will be retained and complemented by additional lighting columns of 8m height with directional light fittings to minimise light pollution spreading outside the site located around the boundary of the hardstanding area as shown on accompanying drawings.

### 3.3.3 Timing of Construction

Construction works are planned to commence immediately following receipt of permissions and licences but subject to any phasing restrictions contained within such licences. The slipways and piling for fendering are marine or intertidal structures and construction will be weather and tidally dependent. It is expected that the works will take approx 6 months to complete overall. The shore based paving and road works would progress in tandem with the marine works. Given the similar nature of works on each shoreline, it is anticipated that one common contractor would be appointed to construct both facilities – particularly the marine works requiring floating plant.

### 3.4 Construction Activities

The works comprise both land based and marine construction with some activities requiring divers to undertake construction works – particularly at the outer end of the slipways. The accompanying drawings show the details of the proposed works and an indicative method statement for construction is included below.

It is also confirmed that there is no dredging associated with these proposals. The works were conceived to minimise disturbance to water flows and to minimise potential disruption to the natural sediment transport regime in Carlingford Lough. The proposals are designed to fit within the natural seabed depths as found on site.

The site at Greenore has a naturally steep beach gradient which is most suitable for construction of a slipway aligned with the natural beach gradient over the main tidal range and with limited piling at the outer end to retain the submerged part of the slipway. There is thus little impedance to the flow of tidal water from construction of the slipway largely aligned with current beach levels.

However, at Greencastle, the site includes a shallower beach profile near the shore and the proposed works include a suspended jetty on supporting isolated piles spanning over the shallow beach and reaching out into deeper water. Access for pedestrians at low to medium tide is maintained under this suspended deck. Ongoing beach access for pedestrians at high tide is accommodated by walking to the upper beach and crossing the shore end of the jetty and returning to the beach on the other side.

No blasting or explosives will be required for the construction of the slipways or jetty.

Should additional navigation marker buoys be deemed necessary by the Carlingford Lough Commission, these will be provided and located as per their requirements. It is anticipated that deadweight concrete or ships anchors would be deployed on the seabed to restrain these navigation buoys. Key materials imported are limited to the approximate quantities listed in Table 3.1.

**Table 3.1: Approximate quantities of key materials to be imported**

<b>Material</b>	<b>Greenore</b>	<b>Greencastle</b>
steel sheet piling at Greenore	200t	nil
tubular steel fender piles ( $\approx 1219$ mm dia. X 25m)	7 nr	12 nr
tubular steel deck piles ( $\approx 508$ mm dia. X 20m)	nil	40 nr
stone fill within sheet piles at Greenore	650m <sup>3</sup>	nil
concrete deck	500 m <sup>3</sup>	1,000 m <sup>3</sup>
steel access walkway at Greencastle	nil	60t
rubber fenders	7 nr	12 nr

### 3.4.1 Method Statement

The assumed construction method of the major work items for Greenore slipway and Greencastle pier & slipway are outlined as follows:

- (i) Mobilise to site and create a local working gradient from land to beach by excavating into existing revetment material at top of beach on both shores to allow tracked plant onto the beach. Small quantities of imported rockfill will be necessary to create this safe working gradient and platform onto the beach. Quantity estimated at less than 200m<sup>3</sup> of rockfill. No significant rockfill bunds will be permitted out over the beach to minimise the potential for washout onto the beach.
- (ii) Mobilise floating barge (or jack-up barge) for driving and drilling of marine piles at outer ends of slipways and jetty. Drive tubular steel piles (for slipway support and fender piles) in marine zone using crane and floating barge at Greencastle. Drive tubular steel piles as fender piles and steel sheet piles around the outer perimeter of the slipway using crane and floating barge at Greenore.

Floating plant will fix their location in the water by using either 2-4 spud legs or jack-up legs temporarily dropped into the seabed or a series of anchors dropped at a distance from the vessel and winched tight to draw them into the seabed and restrain vessel movement. The floating barge will require to be moved periodically to new set-up locations and move off to quayside facilities for loading supplies. It is anticipated that Greenore Port will be used as the supply port for all material deliveries though other contractual arrangements may be adopted.

- (iii) In tandem, working from shore outwards, drive or drill-in steel piles as slipway or jetty support piles extending as far down the beach as practicable with land based craneage. This work will become increasingly tidally restricted as work progresses out the beach so careful sequencing of pitching and pile driving will be required. As significant rockfill bunds are not permitted over the beach, timber spreader mats will be required to carry the weight of large cranes and distribute their loads over the beach. These may be moved as and when required by the cranes.
- (iv) For the slipway at Greenore, the most seaward part requires stone infill within the sheet piles to bring the level up to the required 1:9 gradient. Approx 650m<sup>3</sup> of stone fill will be imported by truck and placed within the slipway by excavator working from shore and beach.
- (v) Once sufficient piling is in place, the concrete deck may be progressed. It is expected that the concrete elements above high water level will be cast insitu and thus supporting formwork will be required. This temporary support may be trestles on the beach or a temporary steel frame from the piles but its duration at any one location will be approximately 7-10 days before being removed and repositioned for the next pour.

It is expected that the concrete deck elements below water level and in the low tidal zone will be installed as precast concrete slabs with instu stitching pours to tie them together at each pile head. These units would be lifted into position by a crane from the beach (or from floating plant) and divers used to install the small volume of stitch concrete from a skip. Approximately 1.5m<sup>3</sup> of concrete with underwater additives to prevent segregation would be placed by the divers at each pile head stitch location.

Once concrete works have been completed and cured (approx 7-10 days after last pour), the final formwork and support elements will be removed from beneath the deck.



- (vi) At Greencastle, the steel framed walkway and handrailing will be bolted into position on the top of the fender piles using a crane working from the beach or from the floating plant. Final fixing of the steel deck and concreting of the pile heads with bollards will follow immediately thereafter.
- (vii) Once sufficient progress has been made with advancement of marine piling and concreting, which are the most time critical elements of the project, the land based works may be progressed. These include topsoil removal, drainage, surfacing, lighting, realignment of entrance, installation of toilet block & services and landscaping.
- (viii) The approach road improvements on the Greencastle Pier Road may be undertaken at any stage in the project and it is anticipated that they may be commenced early in the programme with a view to gaining most benefit upon completion.
- (ix) Upon completion of all marine works, remove all construction materials from beach and ensure beach profile is restored to original condition.

Temporary working areas will be required for access by construction plant on the beach on either side of the slipways. These areas will be subject to trafficking but given the likely plant loads, it is expected that timber mats may be required to support crawler tracks or vehicle wheels. Timber mats will be moved along the beach to suit the location of works as they progress. Upon completion of all works, the adjacent beach areas will be restored to their original condition by careful profiling by excavator and by raking sand to reinstate its surface texture.

Temporary working areas on land will be restricted to the site compounds themselves. No additional temporary works areas are anticipated.

### 3.4.2 Phasing of Construction

It is expected that the duration of works and programme at Greencastle will be as outlined in Table 3.2. Overlapping elements are shown as parallel activities in the programmed week column. These indications are given as a guide only and shall not be taken as definitive or restricting the build programme.

**Table 3.2: Construction Programme at Greencastle**

<b>Construction Task</b>	<b>Duration</b>	<b>Programmed Weeks</b>
Set up site	1 week	wk 1
Piling including fender piles	14 weeks	wk 1 to 14
Precast concrete off site	8 weeks	wk 4 to 11
In situ concrete deck	16 weeks	wk 6 to 21
Precast concrete deck and stitch pours	12 weeks	wk 10 to 21
Install fenders	3 weeks	wk 12 to 14
Steel access walkways	5 weeks	wk 10 to 14
Site hardstanding	10 weeks	wk 13 to 22
Site services, drainage, landscaping	5 weeks	wk 22 to 26
Road improvements	12 weeks	wk 5 to 16

It is expected that the duration of works and programme at Greenore will be as shown in Table 3.3. Overlapping elements are shown as parallel activities in the programmed week column. These indications are given as a guide only and shall not be taken as definitive or restricting the build programme.

**Table 3.3: Construction Programme at Greenore**

<b>Construction Task</b>	<b>Duration</b>	<b>Programmed Weeks</b>
Set up site	1 week	wk 1
Piling incl fender piles	10 weeks	wk 1 to 10
Stone infill within sheet piling	3 weeks	wk 8 to 10
Precast concrete off site	6 weeks	wk 4 to 9
In situ concrete deck	10 weeks	wk 6 to 15
Precast concrete deck and stitch pours	8 weeks	wk 6 to 13
Install fenders	3 weeks	wk 8 to 10
Site hardstanding	8 weeks	wk 11 to 18
Site services, drainage	3 weeks	wk 18 to 20
Port gate and access improvements	5 weeks	wk 6 to 10

### 3.5 Road Modifications

#### 3.5.1 Greencastle Pier Road

The applicant proposes to upgrade and widen parts of the Greencastle Pier Road to provide an improved access for local vehicles and the added ferry vehicles. A target width of 5.5m to allow passing of cars and coaches/lorries has been derived and where possible, this width will be provided in the verges between the existing hedge widths and with minimum disruption to local accesses, hedgerows and dwelling entrances.

However, additional works may be provided by the use of passing bays wherever feasible. This would entail removal of some hedgerows and reinstatement of fence and hedgerow set back into the adjacent field. The upgrade works on the Greencastle Pier Road are proposed to extend along the length of the road from the junction with the Benagh Road to the proposed ferry terminal entrance – a distance of approx 2000m. These offer an enhancement to the road conditions in the immediate area.

This work is described in further detail in the traffic and transportation section of this ES/EIS. These road widenings have been introduced so as not to impact upon the sight lines from existing accesses.

#### 3.5.2 Greenore

The road network at Greenore is considered adequate for the proposed ferry traffic and no upgrade or modification to the road network there is proposed. However, the current access gate into Greenore Port will be set back to accommodate an entrance into the proposed ferry terminal.

The Louth Country Council car-park along the coastline to the south of the proposed terminal will remain as existing.

Please refer to drawings IBT0633-0010 to 0012 for details of road modifications.

### 3.6 Ferry Operation

The proposed ferry vessel shall typically be a Roll-On and Roll-Off vessel (RO-RO) using hydraulically operated ramps at each end that are lowered on to a slipway ashore for boarding and disembarkation, and raised upon departure. Vehicles will drive over one ramp to access the vessel and drive straight through, exiting on the opposite ramp when the crossing is complete.

The vessel is powered by four diesel engines, each driving an omni-directional rudder propeller unit, one near each corner, which provide great manoeuvrability. The propeller units are shielded within the steel hull of the boat rather than projecting below it, to avoid potential damage when approaching the slipways. Rubbing strips are provided at the end of the hull and ramps to allow bearing (and slipping) onto the concrete slipway during berthing.

A ferry with a capacity of approx 40 cars will be adopted. Such a ferry would be approximately 48m long excluding ramps, 15m beam and up to 2m laden draught with a top speed of approximately 8-12 knots depending upon specification and prevailing conditions.

The ferry is expected to operate on an hourly basis from each side commencing around 7am and finishing around 9pm during the summer season. The journey time is expected to be approximately 15 minutes so

dwelling times at each terminal are also expected to be approximately 15 minutes given the one hour cycle time departing each terminal.

### 3.7 Projected Traffic Flows

The applicant predicts projected traffic flows of 100,000 vehicles per annum for two way flows. This is detailed in Tables 3.4 – 3.6. In the event that the Narrow Water Bridge proceeds, the applicant expects that they will lose an element of directly divertible traffic. However, this loss will be compensated by a gain in the extra circular route traffic attracted by the presence of both the ferry and the bridge. Therefore the applicant considers that the ferry project will complement the proposed Narrow Water Bridge and together with the bridge would create a circular route that would transform the Cooley Peninsula and Mourne. The applicant is however also certain, based on the extensive due diligence exercises it had conducted from the inception of its work in 2006, and with the benefit of 45 years' experience in the ferry industry, that the Carlingford Lough ferry project is an entirely viable long term business proposition in its own right.

The total predicted traffic is equivalent to an average of less than 12 cars per hour as a one way flow, assuming an average of a 12 hour working day throughout the year. This total annual flow figure is expected to comprise cars, motorbikes, vans, small trucks, caravans and coaches in the ratios predicted in Table 3.4.

**Table 3.4: Breakdown of total flows by sector**

<b>Sector</b>	<b>%</b>
Cars	84
Motorbikes	5
Commercial/vans	5
Caravans and trailers	4
Coaches	2
	100%

**Table 3.5: Breakdown of total flows by month**

	<b>Monthly profile predicted</b>	<b>%</b>	<b>Total Vehicles predicted (2-way flow)</b>
Winter schedule	Jan	4%	4,000
	Feb	5%	5,000
	Mar	8%	8,000
Summer schedule	Apr	9%	9,000
	May	9%	9,000
	Jun	10%	10,000
	Jul	14%	14,000
	Aug	16%	16,000
	Sep	10%	10,000
Winter schedule	Oct	6%	6,000
	Nov	5%	5,000
	Dec	4%	4,000
		100%	100,000

Note: of which 4 summer months (May - Aug) are 49%



**Table 3.6: Breakdown of total flows by season (peak periods listed)**

<b>Summer Daily Profile predicted</b>		<b>Daily Aug traffic (31 days)</b> (1-way flow)		<b>Winter Daily profile predicted</b>		<b>Daily Sept traffic (30 days)</b> (1-way flow)
7-8am	1%	3				
8-9am	2%	5				
9-10am	4%	10		9-10am	4%	7
10-11am	7%	18		10-11am	6%	10
11-12pm	10%	26		11-12pm	12%	20
12-1pm	14%	36		12-1pm	14%	23
1-2pm	12%	31		1-2pm	16%	27
2-3pm	12%	31		2-3pm	14%	23
3-4pm	10%	26		3-4pm	12%	20
4-5pm	10%	26		4-5pm	9%	15
5-6pm	6%	15		5-6pm	6%	10
6-7pm	5%	13		6-7pm	4%	7
7-8pm	4%	10		7-8pm	3%	5
8-9pm	3%	8				
	100%	258			100%	167

### 3.8 Alternatives

#### 3.8.1 “Do-Nothing” scenario

In the context of this assessment, the “Do Nothing” scenario means no ferry operation would be conceived and traffic would remain on existing road routes around Carlingford Lough.

This could result in existing traffic bottlenecks in locations such as Newry and Warrenpoint being exacerbated during peak tourist season when the majority of vehicles are expected to use the ferry.

In the scenario where no ferry is conceived, there is no added tourist incentive to be advertised and marketed as a draw for tourists to the Mourne and Cooley areas. Also locals who would benefit from a shorter journey distance by using the ferry would not have the option available.

#### 3.8.2 Alternative locations

Alternative locations for the ferry link across the mouth of Carlingford Lough have been considered. These include the following locations but it must be remembered that the sailing points cannot simply be chosen in isolation on each side, as there must be a viable link across the water in terms of suitable sailing distance and navigation.

- (i) Greencastle Point at the western tip of Greencastle village was considered as a terminal location. This was rejected due to the lack of suitable space for queuing lanes and the necessity to reclaim land to provide for this purpose. The shore is also characterised by rocky outcrops which could have necessitated blasting and removal or posed a hazard to navigation of the ferry. The extra disturbance caused by ferry vehicles transiting through the village immediately in front of local houses was also considered as a major factor in rejecting this location.
- (ii) The “Cuttings” located approx 350m south-east of Greenore village was considered as a location for the terminal in Co. Louth. This location was rejected because the ownership to the Cuttings consists of at least 3 to 4 persons / individuals, at a minimum. The Minister for Finance and Greenore Estates Limited are registered owners of parts of the Cuttings, however a very large proportion of the Cuttings consists of what is called “unregistered title”. The applicant’s solicitors were unable to establish who

(and / or how many people) own these lands as the title is unregistered title. The applicant did engage with a number of individuals who claimed to have an interest in / rights over the Cuttings. The discussions did not progress or materialise. The applicant's solicitors advised that to pursue the Cuttings would require negotiation with a number of other potential landowners with potential consequent time delays and with no assurance of success. Furthermore, the northern tip of the "Cuttings" is under the ownership of the Minister for Finance and is accessed by the Coastguard for launching their rescue boat from an adjacent building. Any potential ferry traffic would also have to cross this property and risk interruption to the Coastguard operation. Additionally, the slipway used by the Coastguard is not of sufficient size, in width or length into deep water, to accommodate a Ferry and is widely used by locals for launching pleasure craft and jet skis etc. A new dedicated slipway of longer and wider extent would thus be required to facilitate a ferry operating to a regular timetable. However, the lack of sufficient queuing space on shore has determined that this location would not be suitable.

- (iii) Carlingford Harbour was considered as an alternative location for the ferry terminal in Co. Louth. This location would offer a direct linkage to the main tourist village of Carlingford and could benefit from this association in marketing of the ferry. However, the main harbour area is tidally restricted at low tides and so would not permit a service to operate to a regular timetable. Any potential slipway would thus have to be located outside the Carlingford Harbour walls or would require extensive dredging to deepen a channel into the Harbour to facilitate the ferry. Also, the sailing distance at typically 6-7km is approx twice that of the proposed Greenore to Greencastle route (3km).
- (iv) Carlingford Marina was considered as a potential ferry location on the Co. Louth shore. This location is not tidally restricted and thus avoids the requirement to dredge a channel to facilitate the ferry at all stages of the tide. However, there is not sufficient shore space available for a suitable queuing area for vehicles and this location is thus considered unsuitable without reclamation or taking over an existing functional area for use as a ferry queuing area.
- (v) Other shore locations south of Greencastle towards Cranfield Point were considered. The shoreline in this stretch of coast is characterised by rocky outcrops and long gently sloping beaches which make it unsuitable for provision of a slipway at 1:9 gradient to facilitate a ferry unless extensive dredging or a long access pier are provided. Such an access pier could be a reclaimed causeway or a deck supported on individual piles. In either case of dredging or access pier, there would be an extensive and uneconomic length of works to construct to reach a viable water depth and this stretch of coastline has been deemed unsuitable.
- (vi) Other shore locations north of Greencastle towards Killowen Point were considered. The shoreline in this stretch is also characterised by long gently sloping beaches and the mudflats/sandflats which make it unsuitable for provision of a slipway at 1:9 gradient to facilitate a ferry unless extensive dredging or a long access pier are provided. Such an access pier could be a reclaimed causeway or a deck supported on individual piles. In either case of dredging or access pier, there would be an extensive and uneconomic length of works to construct to reach a viable water depth and this stretch of coastline has been deemed unsuitable.
- (vii) Other shore locations north of Greenore towards Carlingford were considered. The shoreline in this stretch of coast is also characterised by rocky outcrops and long gently sloping beaches which make it unsuitable for provision of a slipway at 1:9 gradient to facilitate a ferry unless extensive dredging or a long access pier are provided. Such an access pier could be a reclaimed causeway or a deck supported on individual piles. In either case of dredging or access pier, there would be an extensive and uneconomic length of works to construct to reach a viable water depth. Furthermore, the intertidal zone is occupied by trestles of oyster farms over significant areas and this stretch of coastline has thus been deemed unsuitable for ferry navigation.
- (viii) Other shore locations south of Greenore towards Ballagan Point were considered. The shoreline in this stretch of coast is also characterised by long gently sloping beaches or wide intertidal areas which make it unsuitable for provision of a slipway at 1:9 gradient to facilitate a ferry unless extensive dredging or a long access pier are provided. Such an access pier could be a reclaimed causeway or a deck supported on individual piles. In either case of dredging or access pier, there would be an extensive and uneconomic length of works to construct to reach a viable water depth. This stretch of coastline has thus been deemed unsuitable for ferry navigation.
- (ix) Locations outside the mouth of Carlingford Lough have been deemed unsuitable as they would require a ferry to operate in a much more exposed wave climate than within the protection of the Lough. Thus

locations from Cranfield to Kilkeel and from Ballagan Point to Dundalk have been deemed unsuitable for a conventional drive-on and drive-off ferry.

- (x) Locations northwards in the Lough from Carlingford Marina to Killowen Point and increasingly towards Warrenpoint/Omeath have been deemed unsuitable as they do not offer a similar extent of road reduction should a ferry be introduced. Such locations only offer a mid Lough crossing rather than a ferry crossing near the mouth of the Lough where most benefit is gained from reduced road transport distance, furthermore, such locations would not meet the novelty and tourist attraction that the Greenore – Greencastle link offers.

It is also noted that a previous study in 2005 showed that a prospective ferry was a viable prospect operating from Greenore to Greencastle across Carlingford Lough. This study entitled “Business Case Analysis to Support the Introduction of a Greenore Greencastle Ferry Link” was commissioned by the Newry Dundalk Joint Chamber Forum established by the Newry and Dundalk Chambers of Commerce. The economic benefit of a ferry link was demonstrated in this study with proposed slipway facilities on each shore. The location at Greencastle village was intended to be at Greencastle Point at the western tip of the village (ref location (i) above). However, local comments at that time suggested that there would be very strong resistance to traffic transiting through the village. With this in mind, the applicant has secured the improved location to the east of the village used in the current proposal. The location at Greenore was intended to be at the “Cuttings” (ref location (ii) above). As outlined in (ii) above, the Cuttings is not a feasible location for the terminal. With this in mind, the applicant has secured the location at Greenore Point used in the current proposal. Carlingford Lough Ferry Feasibility Study

### **3.8.3 Alternative designs**

The designs for the slipway, pier and associated landworks on both sides of Carlingford Lough have evolved during the preliminary design and environmental assessment process. The alternatives and improvements proposed may be considered separately for each shore due to the varying nature of works.

#### **3.8.3.1 Greenore Terminal**

The Greenore terminal design has evolved to remove the proposed access through the public car-park near Greenore Point and re-direct traffic to access the terminal through a relocation of the Port's entrance configuration. This relocation was taken to minimise disturbance to the current public car-park users following concerns raised at a public meeting in Greenore. The relocation of the entrance was facilitated by Greenore Port and this also provided the opportunity to reconfigure the Port's own entrance and weighbridge. This will allow improved flows of HGV's into the Port and minimise any potential clash of HGV's queuing to enter the Port with vehicles arriving to access the ferry terminal.

Refinement of the perimeter to the ferry queuing area was also undertaken to provide enhanced provision for fishermen who habitually use Greenore Point for sea fishing:- another issue which was raised at a public meeting. This consists of new kerbing and a footpath along the shore side of the terminal which will provide a safe location for fishermen to stand. The removal of the current shore-side fencing and replacement with low level bollards will also allow uninterrupted pedestrian access between the public car-park and the ferry terminal with much improved visual amenity and ongoing access for fishermen.

It is noted that the slipway level has remained consistent with the beach to tie in with natural beach levels and avoid significant interruption to the water flows or the hydrodynamic regime nearby. It is considered that any alternative design of slipway that did not respect and tie-in with the existing beach gradients would have created a trap for sediment and caused local disturbance to water flows. Thus no side walls have been proposed on the slipway (though these would have provided significant shelter to the ferry berthing) and fendering has been provided by isolated piles only which minimise intrusion to the flow of water and to visual intrusion.

#### **3.8.3.2 Greencastle Terminal**

The Greencastle terminal is based in a field to the east of Greencastle village. The pier & slipway extending seawards were originally located at the shortest distance from deep water – approximately 30m from the north-west corner of the field. However, following concerns raised at a public meeting in Greencastle, the location was amended to a position midway along the field's seaward boundary so that any disturbance to either neighbouring property on the north-west or south-east would be minimised. The distance to deep water was only impacted marginally by this move.



The design of marine elements has evolved from its first concept stage by removal of the pier alongside the slipway at the shore end of the works. The pier was initially conceived to run alongside the full length of the slipway and provide uninterrupted access for tying up the ferry and for vehicles to come alongside with supplies or fuel. However, it was determined that this level of access from a pier alongside was excessive as supplies and fuel could be driven straight on board and handled on the deck of the ferry. The outer length of pier with associated piling and concrete deck was thus considered redundant and was removed. Fender provision is maintained by the use of single vertical piles and a high level steel pedestrian walkway has been introduced along these fender piles to provide a safe access for tying up. Bollards will be mounted on the top of each fender pile to facilitate the mooring ropes tying up the vessel overnight.

Alternative designs were considered in the queuing area by use of soil bunding to screen the terminal from view alongside parts of the road and perimeter to the field where the terminal is based. However, local concerns regarding visibility of the sea were raised at a public meeting and it was considered that the field perimeter should be maintained as existing wherever possible without soil bunds. Furthermore, it was determined that the entrance to the field from the road, where sightlines would require removal of hedges, should be replanted with local species and a timber fence in keeping with local field boundaries.

An alternative design for the Greencastle terminal could have included a near-shore slipway with dredging of the outer beach to provide suitable water depth for navigation towards the shore. However, given the distance to the shore from deep water and extent of such capital dredging required, it was considered that capital dredging should be avoided to minimise disturbance to local water flows and the hydrodynamic regime. This resulted in the slipway located at a distance from the shore with a high level pier to provide access above the shallow upper beach.

The prospect of future maintenance dredging was also considered when locating the slipway. Any capital dredging in a pocket towards the shore would likely have caused disturbance to local sediment movements with a high possibility that the pocket would become silted-up and require maintenance dredging. The emphasis for the proposed works is as a viable long-term ferry link and the prospect of regular maintenance dredging with possible interruption of the service was not considered acceptable. Furthermore, the ongoing environmental effects of the sediment movement and disposal operations from maintenance dredging were considered to be unacceptable given the designation of SPA in the vicinity.

### 3.9 Other Projects & Proposals

As part of this assessment, a review of proposals in and adjacent to the proposed development sites. These have been considered as part of each individual assessment within this ES/EIS. At Greencastle, a search of lands approximately 1 km of the site midpoint identified several planning applications that have potential to impact upon delivery of the proposal or to be impacted directly by the proposal - these are note below:

Planning Ref	Address	Proposal	Decision	Date of Decision
P/2011/0583/O	Between 70-74 Greencastle Pier Road Kilkeel	Site for dwelling & garage	Approval	15 March 2013
P/2010/1262/F	64 Greencastle Pier Road Kilkeel	Garage	Approval	4 January 2011
P/2009/0567	64 Greencastle Pier Road Kilkeel	Replacement Dwelling	Approval	15 September 2009
P/2011/0581/F	62-64 Greencastle Pier Road Kilkeel	Two dwellings & garages	Approval	31 October 2011

None of these approved schemes appear to be directly impacted on by the proposal.

At Greenore, there are a number of planning applications relating to small adjustments to Port operations, including new boundary fencing. These are not directly or indirectly impacted on by the proposal.