ALAB
An Bord Achomhairc Um Cheadúnais Dobharshaothraithe

Notice of Appeal Under Section 40(1) of Fisheries (Amendment) Act 1997 (No.23)

AP1 – 116 – 25

APPEAL FORM

Please note that in accordance with Section 40(2) of the 1997 Act this form will only be accepted if delivered by **REGISTERED POST** or by **hand** to the ALAB offices at the following address: **Aquaculture Licences Appeals Board, Kilminchy Court, Dublin Road, Portlaoise, Co. Laois, R32 DTW5**

AQUACULTURE LICENCES APPEALS BOARD
26 JUN 2025
RECEIVED

Name of Appellant (Block Letters)	SANDRA BUCKLEY	
Address of Appellant		
Eircode		
Phone No.		Email address (enter below)
Mobile No		

Please note if there is **any change** to the details given above, the onus is on the appellant to ensure that ALAB is notified accordingly.

FEES

Fees must be received by the closing date for receipt of appeals	Amount	Tick
An appeal by an applicant for a licence against a decision by the Minister in respect of that application	€380	
An appeal by the holder of a licence against the revocation or amendment of that licence by the Minister	€380	
An appeal by any other individual or organisation	€150	X
Request for an Oral Hearing* (fee payable in addition to appeal fee) *In the event that the Board decides not to hold an Oral Hearing the fee will not be refunded	€75	

Fees can be paid by way of Cheque or Electronic Funds Transfer

Cheques are payable to the Aquaculture Licences Appeals Board in accordance with the Aquaculture Licensing Appeals (Fees) Regulations, 2021 (S.I. No. 771 of 2021)

Electronic Funds Transfer Details	IBAN: IE89AIBK93104704051067	BIC: AIBKIE2D

Please note the following:

1. Failure to submit the appropriate fee with your appeal will result in your appeal being deemed invalid.
2. Payment of the correct fees **must be received on or before** the closing date for receipt of appeals, otherwise the appeal will not be accepted.
3. The appropriate fee (or a request for an oral hearing) must be submitted against each determination being appealed.

RL 0156 0193 9IE

The Legislation governing the appeals is set out at Appendix 1 below.

SUBJECT MATTER OF THE APPEAL
Grounds of Appeal Licence T05/472A Licence T05/472A Woodstown Bay Shellfish Limited has applied for authorisation to cultivate mussels using bottom culture on the sub-tidal foreshore on a 23 1626 hectare site (T05-472A) in Kinsale, Harbour, Co Cork.

Site Reference Number: - (as allocated by the Department of Agriculture, Food, and the Marine)	T05/472A

APPELLANT'S PARTICULAR INTEREST

Briefly outline your particular interest in the outcome of the appeal:

I respectfully file this appeal pursuant to Section 40(1) of the Fisheries (Amendment) Act 1997 (the 1997 Act).
I am a very concerned resident of Kinsale I wish to appeal the granting of a license TO cultivate mussels using bottom culture

GROUNDS OF APPEAL

State in full the grounds of appeal and the reasons, considerations, and arguments on which they are based) (if necessary, on additional page(s)):

SEE ATTACHED

CONFIRMATION NOTICE ON EIA PORTAL (if required)

In accordance with Section 41(1) f of the Fisheries (Amendment) Act 1997, where an Environmental Impact Assessment (EIA) is required for the project in question, please provide a copy of the confirmation notice, or other evidence (such as the Portal ID Number) that the proposed aquaculture the subject of this appeal is included on the portal established under Section 172A of the Planning and Development Act 2000. (See Explanatory Note at Appendix 2 below for further information).

Please tick the relevant box below:

EIA Portal Confirmation Notice is enclosed with this Notice of Appeal	
Other evidence of Project's inclusion on EIA Portal is enclosed or set out below (such as the Portal ID Number)	
An EIA was not completed in the Application stage/the Project does not appear on the EIA Portal	X

Details of other evidence	N/A

Signed by the Appellant		Date	25 Jan 2023

Please note that this form will only be accepted by REGISTERED POST or handed in to the ALAB offices

Payment of fees must be received on or before the closing date for receipt of appeals, otherwise the appeal will be deemed invalid.

This Notice of Appeal should be completed under each heading, including all the documents, particulars, or information as specified in the notice and duly signed by the appellant, and may include such additional documents, particulars, or information relating to the appeal as the appellant considers necessary or appropriate."

Appendix 1.

Extract from the Fisheries (Amendment) Act 1997 (No.23)

40 (1) A person aggrieved by a decision of the Minister on an application for an aquaculture licence or by the revocation or amendment of an aquaculture licence may, before the expiration of a period of one month beginning on the date of publication in accordance with this Act of that decision, or the notification to the person of the revocation or amendment, appeal to the Board against the decision, revocation or amendment, by serving on the Board a notice of appeal.

(2) A notice of appeal shall be served

(a) by sending it by **registered post** to the Board,

(b) by **leaving it at the office of the Board**, during normal office hours, with a person who is apparently an employee of the Board, or

(c) by such other means as may be prescribed.

(3) The Board shall not consider an appeal notice of which is received by it later than the expiration of the period referred to in subsection (1)

41. (1) For an appeal under section 40 to be valid, the notice of appeal shall

(a) be in writing,

(b) state the name and address of the appellant,

(c) state the subject matter of the appeal,

(d) state the appellant's particular interest in the outcome of the appeal,

(e) state in full the grounds of the appeal and the reasons, considerations and arguments on which they are based, and

(f) where an environmental impact assessment is required under Regulation 3 of the Aquaculture Appeals (Environmental Impact Assessment) Regulations 2012 (SI No 468 of 2012), include evidence of compliance with paragraph (3A) of the said Regulation 3, and

(g) **be accompanied by such fee**, if any, as may be payable in respect of such an appeal in accordance with regulations under *section 63*, and

shall be accompanied by such documents, particulars or other information relating to the appeal as the appellant considers necessary or appropriate.

**Please contact the ALAB offices in advance to confirm office opening hours.

Appendix 2.

Explanatory Note: EIA Portal Confirmation Notice/Portal ID number

The EIA Portal is provided by the Department of Housing, Local Government and Heritage as an electronic notification to the public of requests for development consent that are accompanied by an Environmental Impact Assessment Report (EIA Applications). The purpose of the portal is to provide information necessary for facilitating early and effective opportunities to participate in environmental decision-making procedures.

The portal contains information on EIA applications made since 16 May 2017, including the competent authority(ies) to which they are submitted, the name of the applicant, a description of the project, as well as the location on a GIS map, as well as the Portal ID number. The portal is searchable by these metrics and can be accessed at: https://housinggovie.maps.arcgis.com/apps/webappviewer/index.html?id=d7d5a3d48f104ecbb206e7e5f84b71f1

Section 41(1)(f) of the Fisheries (Amendment) Act 1997 requires that "*where an environmental impact assessment is required*" the notice of appeal shall show compliance with Regulation 3A of the Aquaculture Appeals (Environmental Impact Assessment) Regulations 2012 (S.I. 468 2012), as amended by the Aquaculture Appeals (Environmental Impact Assessment) (Amendment) Regulations 2019 (S.I. 279/2019) (The EIA Regulations)

Regulation 3A of the EIA Regulations requires that, in cases where an EIA is required because (i) the proposed aquaculture is of a class specified in Regulation 5(1)(a)(b)(c) or (d) of the Aquaculture (Licence Application) Regulations 1998 as amended – listed below, or (ii) the Minister has determined that an EIA was required as part of their consideration of an application for intensive fish farming, an appellant (that is, the party submitting the appeal to ALAB, including a third party appellant as the case may be) must provide evidence that the proposed aquaculture project that is the subject of the appeal is included on the EIA portal.

If you are a third-party appellant (that is, not the original applicant) and you are unsure if an EIA was carried out, or if you cannot find the relevant Portal ID number on the EIA portal at the link provided, please contact the Department of Housing, Local Government and Heritage for assistance before submitting your appeal form.

The Classes of aquaculture that are required to undergo an EIA specified in Regulation 5(1)(a)(b)(c) and (d) of the Aquaculture (Licence Application) Regulations 1998 S.I. 236 of 1998 as amended are:

a) Marine based intensive fish farm (other than for trial or research purposes where the output would not exceed 50 tonnes);
b) All fish breeding installations consisting of cage rearing in lakes;
c) All fish breeding installations upstream of drinking water intakes;
d) Other fresh-water fish breeding installations which would exceed 1 million smolts and with less than 1 cubic metre per second per 1 million smolts low flow diluting waters.

In addition, under Regulation 5(1)(e) of the 1998 Regulations, the Minister may, as part of his or her consideration of an application for intensive fish farming, make a determination under Regulation 4A that an EIA is required.

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Grounds of Appeal: Licence T05/472A

cence T05/472A: Woodstown Bay Shellfish Limited has applied for authorisation to cultivate mussels using bottom culture on the sub-tidal foreshore on a 23.1626 hectare site (T05-472A) in Kinsale, Harbour, Co. Cork. See item 2 attached.

NAME OF APPELLANT: SANDRA BUCKLEY

ADDRESS OF APPELLANT:

APPELLANT'S PARTICULAR INTEREST

I respectfully file this appeal pursuant to Section 40(1) of the Fisheries (Amendment) Act 1997 (the **1997 Act**).

I am a very concerned resident of Kinsale. I wish to appeal the granting of a license cultivate mussels using bottom culture.

I grew up here, used the dock beach since a child. I work and live here and use the sailing and swimming facilities especially at the Dock and Summer Cove. Kinsale is a stunning town, protected architecturally with the added advantage of a beautiful, safe, wide, navigable harbour. The surrounding sea is unpolluted and clean to swim in.

This towns income, is primarily based on tourism and sea activities (fishing, sailing, diving etc.) all year round. Several of these activities may be impacted by this farm.

The town is dependent on our local economy. Our aim should be to enhance/promote well-being, health, local amenities/jobs, not damaging it by giving license to huge destruction that will damage the seabed irrevocably, and may pollute and upset not only the balance of our harbour ecosystem.

The town is an ambassador for our country. People, visit from all over the world, spreading the word on how beautiful it is, bringing more tourists to the town/country. We are endangering so much by this application.

GROUNDS OF APPEAL: Licence T05/472A

Appellant: Sandra Buckley

Groups of Appeal 1: Researching the available literature on this application, it appears there has been a failure to assess adequately the environmental risks as per Habitats Directive and National Biodiversity Obligations.

Appropriate Assessment screening:

The Appropriate Assessment screening conducted for licence T05/472A is flawed as it fails to meet the legal standards required under Article 6(3) of the Habitats Directive. Such failures render the licensing decision unsound legally and constitutes a breach of Ireland's EU obligations.

Inadequate Data Sources - Fatal Methodology Flaw

The **Appropriate Assessment** screening was predominantly based on generic databases/desktop studies, as opposed to site-specific scientific surveys. **The Marine Institute's own methodology**

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acknowledges the use of "Open Street Maps, Google Earth, and Bing aerial photography" as primary data sources.

This approach does not show due diligence in adequately assessing sensitive benthic habitats in a semi-enclosed estuarine environment.

This offsite, desktop assessment cannot detect the presence of Annex I habitats such as Maerl communities, seagrass beds, or other ecologically significant seafloor communities that may exist within the 23-hectare licence area.

Site-specific benthic surveys to determine the actual presence or absence of priority habitats, were NOT conducted at the proposed T05/472A site.

Considering this development is in a sensitive estuarine zone and involves seabed dredging in close proximity to designated Natura 2000 sites, omitting site-specific habitat surveys indicates a fundamental breach of assessment standards established in Irish and EU guidance.

Violation of the Precautionary Principle

As per the precautionary principle established in ECJ case C-127/02 (Waddenvereniging), a project, where scientific uncertainty exists, on potential effects on Natura 2000 sites, it is essential that there is a full Appropriate Assessment, rather than being screened out as having "no significant effect."

The lack of site-specific ecological surveys is evidence of exactly this uncertainty.

Recently peer-reviewed research (Beca-Carretero et al., 2024) has shown Kinsale Harbour to exhibit environmental conditions highly favourable for seagrass colonisation—a priority Annex I habitat. See item 10 attached.

Also, in the last few days, a report has been published in the Echo. This refers to the Cork Sub Aqua Club, who undertook an evaluation of 23-hectar site between Dock Beach, James Fort and Charles Fort after the news of the proposed mussel farm. The evaluation report is attached,

See item 12 attached.

The precautionary principle necessitates that where there are destructive activities involved, that in advance of approving licences, there must be a verification of the potential existence of protected habitats using appropriate survey methodology

The **Appropriate Assessment** screening neither conducted surveys to determine actual habitat presence nor took into consideration this published scientific evidence.

The conclusion of "no significant effect" where there was no adequate baseline data directly contravenes the basics of the EU legal principle.

Inadequate Assessment of Habitat Connectivity

The screening views the proposed site, as if in isolation, and fails to correctly assess functional ecological connection of the licence area and adjacent Special Protection Areas (Old Head of Kinsale SPA and the Sovereign Islands SPA). Semi-enclosed estuarine systems such as Kinsale Harbour do not

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exist in isolation but are part of a larger integrated ecosystem where an impact in one area can have a large ripple effect further downstream, in any or all of the system, due to water circulation patterns, movement of species/sediment.

Bottom mussel culture, necessitates dredging, thus creates documented risks of benthic habitat disturbance, sediment resuspension, as well as impacting water quality which can disturb the integrity of the wider conservation network.

The screening again failed to adequately assess this interconnectedness, indicative of a fundamental gap in the required analysis as per Article 6(3).

Legal Consequences

The collective failures of insufficient baseline data and connectivity assessment along with violation of the precautionary principle, render the **Appropriate Assessment** screening legally weak and certainly not capable of supporting a valid licensing decision.

These fundamental shortcomings are further compounded by the invasive species assessment failures described in Grounds of appeal 2 below, establishing a pattern of non-compliance with the mandatory environmental assessment requirements.

Therefore, this licence must be refused as it is legally invalid due to basic procedural failures that cannot be rectified by solely issuing conditions.

GROUNDS OF APPEAL 2: Unquantified and Unregulated Risk of Invasive Alien Species (IAS)

The decision to licence, lacks evidence it complied with established national and EU protocols for avoiding the introduction and proliferation of invasive alien species, which indicates a direct breach of Regulation (EU) 1143/2014 and national biosecurity obligations. See item 9 attached

Non-Compliance with Established National IAS Protocols

Ireland created comprehensive IAS monitoring protocols through BIM's Shellfish Associated Species Inventory (SASI) system, developed specifically to meet EU obligations as per regulation 1143/2014. See item 11.0 attached.

The SASI methodology provides standardised protocols for assessing/monitoring IAS risk in aquaculture operations, and was implemented across Irish shellfish growing areas since 2010.

Again, the licence application T05/472A, fails to fully demonstrate compliance with these established national protocols. No evidence is provided that:

- IAS screening and quarantine protocols for seed stock procurement have been specified
- Baseline IAS monitoring protocols have been established for the licence conditions
- Mandatory equipment decontamination procedures have been defined
- Ongoing surveillance protocols have been incorporated into licence requirements

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The absence of these represents a fundamental procedural failure, which undermines any validity of the licensing decision and links directly to the inadequate baseline environmental assessment identified in Grounds of appeal 1 above.

Documented High-Risk Vectors Inadequately Addressed

BIM's Alien Species Report (2024) specifically identifies bottom mussel culture as a high-risk vector for IAS introduction, and established populations of problematic species have been documented including Didemnum vexillum (carpet sea squirt) and Crepidula fornicata (slipper limpet) at Irish mussel cultivation sites. See item 11.4 attached

The report identifies two critical IAS pathways directly relevant to the proposed development:

1. Seed stock importation: Evidenced by the documented decline of Irish Sea seed mussel beds, dependence on imported seed carries increasing and unquantified risk. See items 11.3

2. Equipment transfer: Transporting dredging equipment from harbour to harbour can transfer larval or sessile stages of harmful non native species if not rigorously decontaminated

The licence application does not specify the origin of seed stock to be used or assure that established IAS risk assessment protocols will be implemented. The licensing documentation provided no evidence of mitigation protocols, even though, the identification of these pathways as priority vectors is in official government documentation.

Legal Breach of EU and National Obligations

Failing to do this goes directly against Article 13 of Regulation (EU) 1143/2014, which necessitates that Member States establish surveillance systems for early detection of invasive alien species.

Ireland has these systems established through the SASI protocol. However, during the licensing process, DAFM's failed to demand compliance with these same protocols, constituting a breach of Ireland's EU obligations.

In addition, the absence of IAS screening goes against Article 7 of S.I. No. 477/2011 (European Communities (Birds and Natural Habitats) Regulations). This necessitates competent authorities, ensure appropriate risk assessment protocols are performed for activities that may introduce non-native species.

Specific Risk to Kinsale Harbour

Kinsale Harbour due to it being semi-enclosed, creates especially favourable conditions allowing IAS establishment and proliferation. In such an environment type, invasive species once introduced are extremely difficult to remove as they rapidly colonise any suitable habitat evidenced by established populations of non native species in similar Irish coastal locations in various studies.

Due to this failure to enforce established national IAS protocols before licensing, an unacceptable risk has developed that could cause catastrophic irreversible ecological damage to the ecosystem of Kinsale Harbour. The assessment of this can't even be performed correctly considering the completely inadequate baseline surveys, as mentioned in Grounds of appeal 1 above.

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Legal Remedy Required

Failure of the licensing authority to ensure compliance with established national IAS protocols now shows the decision to be procedurally flawed and legally invalid. This and the added environmental assessment failures outlined in Grounds of appeal 1, shows a systematic breaching of mandatory procedures, therefore re-enforcing that the licence should be refused as the decision taken previously is unsustainable on legal grounds.

Before any approval by appropriate experts of any future licensing consideration, a detailed, comprehensive IAS risk assessment and monitoring protocols, in alignment with established national standards, must be incorporated.

In addition to the above ecological issues

Public Access and Recreational Use
Large-scale aquaculture developments can restrict navigation, impact traditional fishing routes, and interfere with recreational activities. It remains unclear how we can preserve public access o if local stakeholders such as water sports users and tourism operators were consulted sufficiently in the licensing process.

This application will definitely prevent access even if temporarily to the Dock Beach but might well destroy the wish to visit. It will severely damage the Dock beach which has been proposed as the place of loading the mussels from the dredging machines onto lorries/trucks which presumably will be large. The dredgers alone will tear up the beach coming close enough for loading.

Additionally, there seems to be a huge lack of consideration regarding access to the beach. Presently a small narrow path. The farm requires trucks to cart the mussels to market. The existing path will be destroyed as well as the green lawn or else the field that presently exists, therefore destroying both public and private property. The land will be churned up, or a more permanent road, gravel path built, reducing the natural unspoilt charm of the place. The Dock has both homes and holiday homes, so the beauty of the area is important, this area also is the starting point of the trail to St James fort, a tourist attraction, and historical interest. Were local residents or the chamber of tourism consulted?

Also, any road building/repairs will presumably cost taxpayers, for no added benefit, in fact the opposite.

The proposed development should have a positive effect on the economy of the local area;

Navigational and Operational Safety Overlooked
Under the Fisheries (Amendment) Act 1997, the Minister must consider the implications of aquaculture operations on navigation and the rights of other marine users. No anchor zones and exclusion zones will prohibit existing fishing and recreational activities.

This application is to provide just 6 jobs over 4 years. It is very unclear how this level of destruction can justify 6 jobs. Especially when it appears more jobs will be lost than gained.

Example 1: Any fishermen that fish over the bed will lose their permit to do so. The fishermen involved already say this will most likely result in the loss of several jobs as most areas are already occupied by other fishermen so no place left to fish locally.

The Bullman (Summer Cove) and the Dock bar (Dock Beach), as well as the marinas attract thousands of people, can we assure that there won't be an impact on our pristine waters

Fouling of Raw Water Intakes – A Known Hazard

Example 2. The water is pristine for the most part and lends itself to swimming, diving, sailing etc. The presence of an estimated 2 billion mussels and their excrement and sediment being re-suspended will change that. Murky water does not attract tourists/locals involved in sea activities. Loss of tourism leads to loss of local economy revenue.

Also, Mussel larvae (veligers) can infiltrate and colonise raw water intake systems in leisure and commercial vessels, particularly those moored long-term or infrequently used. Resulting blockages may lead to engine overheating and failure. This risk has not been acknowledged in the licence determination. The consequences may extend to increased RNLI call-outs, raising public safety and resourcing concerns. No evidence is provided that the Harbour Master, RNLI, boat owners or marina operators were consulted, nor are any mitigation measures (e.g. buffer zones or monitoring protocols) described. This constitutes a serious procedural deficiency. A **Marine Navigation Impact Assessment** is required to address this omission. This concern was explicitly raised in the submission by the Kinsale Chamber of Tourism and Business.

There are also sailing schools that directly trains students over that area. See attached item 14 a harbour map indicating activities and their zones.

25 June 25

Item 2
T05/4 72A

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AQUACULTURE - LICENSING UNDER

FISHERIES (AMENDMENT) ACT 1997 as amended

and

FORESHORE ACT 1933 as amended

Application Form for an Aquaculture and Foreshore Licence for a single specific site.
If a Licence is required for more than one site a separate application form must be completed for each site.

Important Note

Section 4 of the Fisheries and Foreshore (Amendment) Act, 1998 (No. 54 of 1998) prohibits any person making an application for an Aquaculture Licence from commencing aquaculture operations until duly licensed under the Fisheries (Amendment) Act. 1997 (No. 23 of 1997), and provides that a breach of that prohibition will cause the application to fail.

A copy of an Environmental Impact Statement and Natura Impact Statement should be enclosed, if required, with all new, review and renewal applications. See Guidance Notes Section 3.

Aquaculture & Foreshore Management Division
Department of Agriculture, Food and the Marine
National Seafood Centre
Clonakilty, Co. Cork
P85 TX47
Telephone: (023) 8859500
Fax: (023) 8821782

Revised May 2018

AQUACULTURE AND FORESHORE LICENCE APPLICATION FORM, for purposes of FISHERIES (AMENDMENT) ACT, 1997 and FORESHORE ACT, 1933

NB: The accompanying Guidance Notes should be read before completing this form.

Note: Details provided in Parts 1 and 2 will be made available for public inspection. Details provided in Parts 3 and 4 and any other information supplied will not be released except as may be required by law, including the Freedom of Information Act 1997 as amended.

USE BLOCK CAPITALS IN BLACK INK PLEASE

For Office Use

Application Ref. No.

Date of Receipt (Dept. Stamp):

Type of Applicant (tick one)

Sole Trader	
Partnership	
Company	✓
Co Operative	
Other Please specify-	

PART 1: PRELIMINARY DETAILS

Applicant's Name(s)

1.
Address

2.
Address

3.
Address

4.
Address.

2.2 MARINE-BASED SHELLFISH AQUACULTURE

When filling out this section refer also to 2.2A and Guidance Note 3.3 for information on Conditions and Documents required with this application type

Proposed Site Location

(i) Bay

(ii) County

(iii) OS Map No

(iv) Co-ordinates of Site (please specify coordinate reference system used e.g. Irish Grid (IG) or Irish Transverse Mercator (ITM) or Latitude Longitude [in which case specify whether ETRS89 or WGS84 etc.])

NB [illegible] Regulations [illegible]

(ix) Method of culture (rope, trestles – intensive, bottom – extensive, other)

(x) Proposed number of lines/ropes/trestles as per site layout drawing

(xi) Proposed Production Tonnage

Year 1	Year 2	Year 3	Year 4

(xii) (a) Please outline the reasons for site selection

(b) If using trestles please outline the physical characteristics of the site which make it suitable for using trestles

N/A

(xiii) Is it intended that the product is for direct human consumption or bait grown. Please specify

(xiv) How will the visual impact issues of the flotation devices for [illegible] location be addressed ?

(xv) Is the site located in Designated Shellfish Waters Area ? Refer [illegible]

Yes ☐ No ☐

If yes give details.

If no outline the reasons why you believe the site suitable for the pr[illegible] notwithstanding its location outside Designated Shellfish Waters A[illegible]

(xvi) Has the area been classified under Food Sa[illegible] the current classification of the area for the propo[illegible]

Not at Present

(xvii) Is the site located in/adjacent to a sensitive [illegible] (Special Area of Conservation) i.e. a Natura 2000 [illegible] sites)

YES

(xviii) Are there known sources of pollution in th[illegible] If yes please give full details

(xix) Methods used to harvest the shellfish and de[illegible] shellfish

xxv) What are the main predators of the species to be [illegible]

xxvi) Describe the control methods which [illegible]

See Part 2.2A for details of documentation to be included with this application type

2.2A DOCUMENTATION REQUIRED FOR MARINE-BASED SHELLFISH AQUACULTURE

(to be included separately with a Licence Application for a new site or for a renewal or review of an existing Licence)

1. **An appropriate Ordnance Survey Map (recommendation is a map to the Scale of 1:10,000/1:10,560, i.e. equivalent to a six inch map).** Note: The proposed access route to the site from the public road across tidal foreshore must also be shown on the map

2. **Scale drawing of the structures to be used and the layout of the farm.**
The proposed site drawings must illustrate all surface structures above and below the water including mooring blocks (recommended scales normally 1:100 for structures and 1:200 for layout) (See Guidance Note 3.3.2)

3. **The prescribed application fee (See Guidance Note Section 4)**

4. **If the applicant is a limited Company within the meaning of the Companies Act 1963, as amended, the Certificate of Incorporation and Memorandum and Articles of Association**

5. **If the applicant is a Co-operative, the Certificate of Incorporation and Rules of the Co-operative Society**

6. **Environmental Impact Statement (if required) in certain cases- See Guidance Notes Section 3.3.1**

7. **Alien Species dossier (where required) – See Guidance Notes Section 3.3.1**

NOW COMPLETE PARTS 2.6, 3, 4 AND 5 PLEASE

2.6 Employment, Qualifications, Experience, etc
TO BE FILLED IN BY ALL AQUACULTURE APPLICANTS

(i) Please provide details of experience/qualifications of the applicant and any key personnel which are relevant to the aquaculture now proposed

[illegible] [illegible] [illegible] which have more than [illegible] yrs exper.
[illegible] [illegible] the Company that [illegible] [illegible] [illegible]
[illegible] general [illegible] of the Barlow family has recently expanded [illegible]
export Markets to include China & Hong Kong
Current management Staff have been Successful at opening new
markets with the help of Staff member Completion of Degrees [illegible]
Aqua business & engineering. Also 15 years experience in bottom
Mussel Cultivation at Companys other Sites around the Country.

(ii) If a new application please provide details of projected employment creation during first four years of the proposed aquaculture project:

(iii) In the case of a renewal please provide current and future details:

Currently employ 30 full time staff at [illegible]ster growing site
in Waterford.

[illegible]rant of this Licence would allow us to grow staff
by 6 people over 4 years

FULLTIME JOBS

Year 1 Year 2 Year 3 Year 4

PART TIME JOBS

Year 1 Year 2 Year 3 Year 4

PART 5: APPLICATION DOCUMENT

The following documents are enclosed with this application
(Refer to *Guidance Note Section 3.3 – Guidance on Application Documentation*)

No.	DOCUMENTATION	YES	NO	N/A
1	An appropriate Ordnance Survey Map (recommendation is a map to the scale of 1:10,000/10:10,560, i.e., equivalent to a six inch map)			
1	The proposed access route to the site from the public road across tidal foreshore must also be shown			
1	Scale drawing of the structures to be used (recommended scale normally 1:100 for structures)			
2	Scale drawing of farm layout (recommended scale normally 1:200 for layout)			
3	The prescribed application fee			
4	Environmental Impact Statement (EIS), if required			
4a	Natura Impact Statement (NIS), if required			
5	Water Quality Analysis Report, if appropriate			
6	Decision of Planning Authority under the Planning Acts, if required			
	Copy of Licence under Section 4 of the Local Government (Water Pollution) Act, 1977 – Effluent Discharge, if required			
8	If the applicant is a limited Company within the meaning of the Companies Act 1963, as amended, a copy of the Certificate of Incorporation and Memorandum and Articles of Association			
9	If the applicant is a Co-operative, a copy of the Certificate of Incorporation and Rules of the Co-operative Society			
10	Integrated Pest Management Plan, if required			
11	Alien Species documentation, if required			

PART 5 DECLARATION AND SIGNING

NB: Refer to Guidance Note Section 3.5 and Section 4 - Guidance on Declaration and Signing and Annual Aquaculture and Foreshore Licence Fees

If this is a renewal application have you met all licence conditions of the existing aquaculture licence? If applicable explain why you have not complied with all conditions

I/We hereby declare the information provided in Parts 1, 2, 3 and 4 above to the best of my/our knowledge and that I am over 18 years of age. I We have enclosed with this application

Signature(s) of Applicant(s)

Please state capacity of persons signing on behalf of a Company Co-op

Date

NB All persons named on this licence application must sign and date the Only the existing licence holder(s) can apply for the renewal of a previous

Preferred method of contact Department of Agriculture Food and the Marine

Refer to Guidance Note Section 4 - Guidance on Annual Aquaculture and Foreshore

The application form should be returned to

Aquaculture Licensing
Aquaculture & Foreshore Management Division
Department of Agriculture Food and the Marine
National Seafood Centre
Clonakilty
Co Cork
P85 TX47

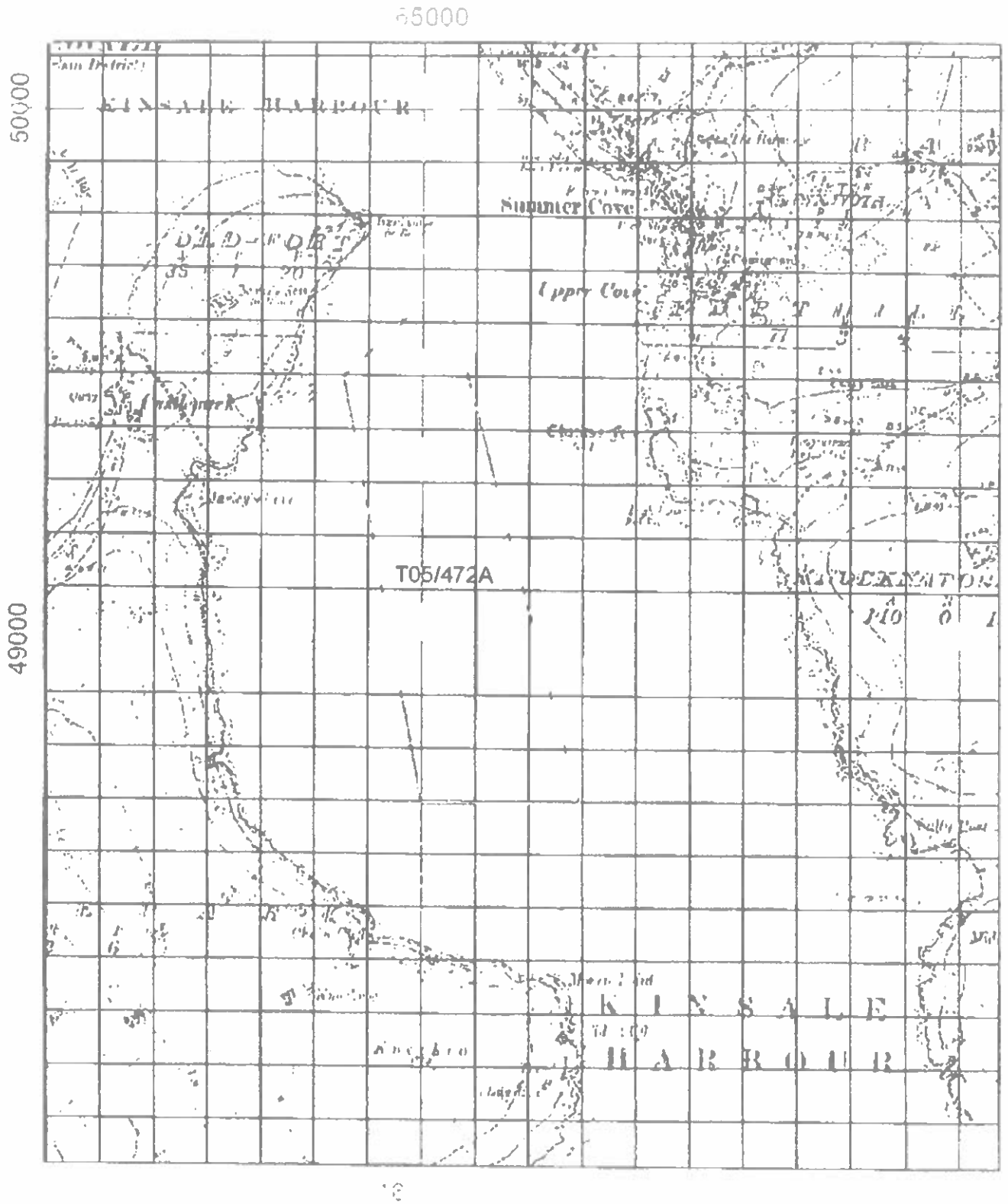
1 NO. SITE AT Kinsale Harbour CO.Cork

Co-ordinates & Area

Site T05/472A (23.1626 Ha)

The area seaward of the high water mark and enclosed by a line drawn from Irish National Grid Reference point

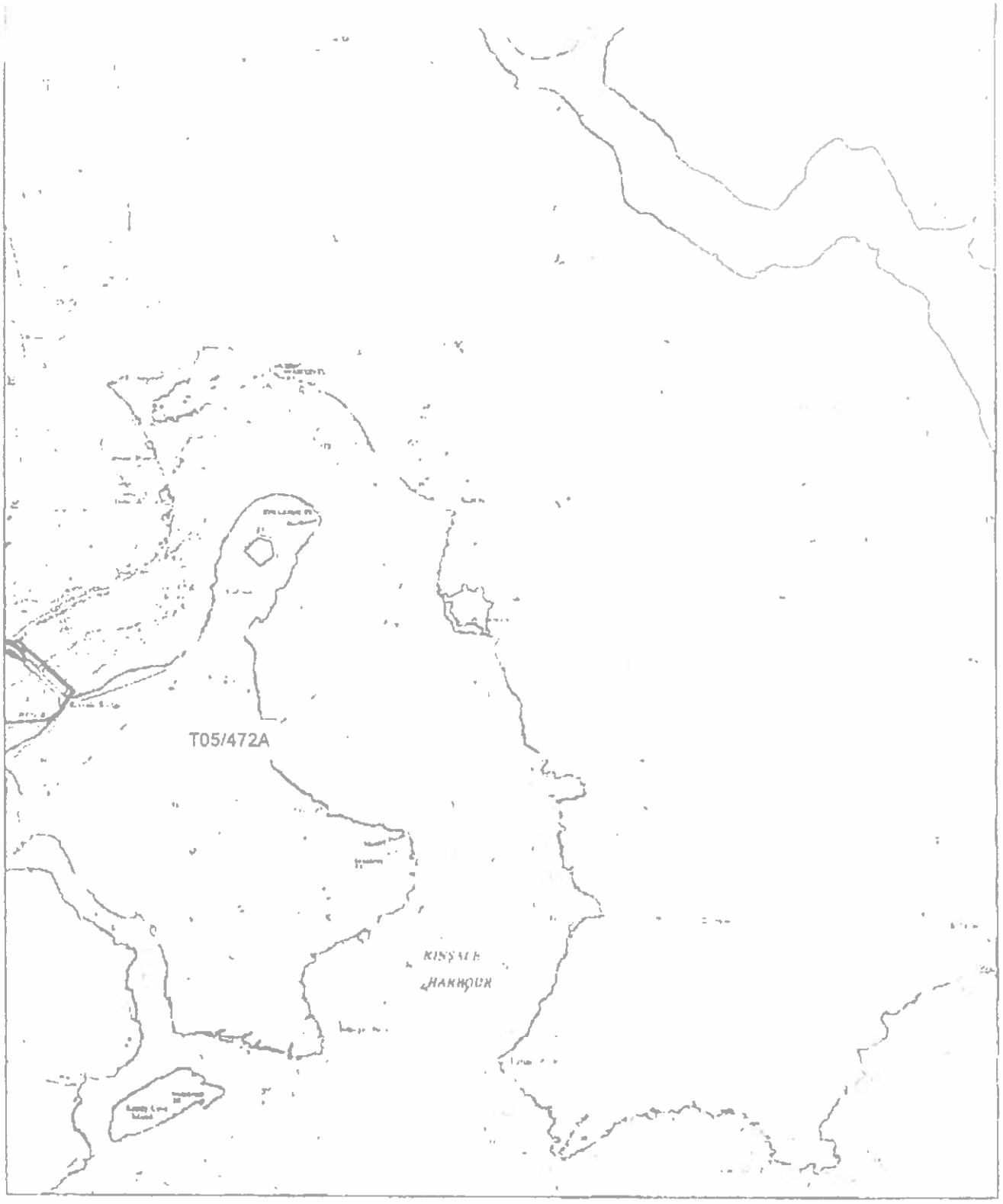
164853, 049499 to Irish National Grid Reference point
165039, 049675 to Irish National Grid Reference point
165295, 048695 to Irish National Grid Reference point
165001, 048697 to the first mentioned point.



Aqua Culture Sites
Site_Status
Application
Application Lapsed
Application Refused
Application Renewal
Application Withdrawn
Licence Altered
Licence Granted
Licence Surrendered
Licensed
Order Fishery Order
Unknown
Unlicensed
100 Metre Perimeters Only

1:10,000

Site highlighted in red denotes application



Aqua Culture Sites
Site Status

1:24,000

Site highlighted in red denotes application

Part of Admiralty Chart Nos 2053-0
Not to be used for Navigation

Item 12 T05/472A

Survey of Seagrass Beds in Kinsale Harbour, Co. Cork

Dr. Tim Butter, Cork Sub Aqua Club

23 June 2025

Introduction

Seagrass meadows are a keystone habitat. They constitute biodiversity hot spots. They have a high capacity to absorb atmospheric carbon dioxide. And the root system stabilizes inshore sediment and can reduce coastal erosion.

Seagrass is a marine flowering plant rather than a seaweed. Seaweeds are algae and have a relatively simple structure. Seagrass, however, has a complex structure that includes roots and flowers. There are many seagrass species globally, but the sub-tidal seagrass that occurs in Irish waters is *Zostera marina*. It grows in soft muddy/sandy sediments typically at depths of 2 to 5 metres below low water mark, in areas that are protected from disturbance from winter storms. It generally occurs in sheltered bays and inlets. Once established, the plants grow quite densely with their horizontal root system stabilising the sediment. The seagrass then forms dense beds or meadows.

Seagrass has long been known as a shelter for many species of marine animals, including a wide variety of molluscs, crustaceans, sea anemones and fishes. Many species of direct commercial importance use seagrass beds, including lobster and cod. It is also used by a large number of "bait fish" species such as sandeel and sprat, that are vital components of the wider marine food web.

In recent years interest has grown in the ability of seagrass to sequester atmospheric carbon which is then locked up within the root system of the seagrass meadow. It has been estimated that seagrass can absorb carbon at a rate 35 times faster than the same area of tropical rainforest ( ).

However, seagrass meadows are a habitat under threat. There is no data on seagrass losses in Ireland, but in the UK, for example, it is estimated that 92% of seagrass cover has been lost, primarily due to pollution and disturbance from human activities. Seagrass is easily damaged by dredging, for example. There is therefore a need to document and protect our remaining areas of seagrass.

Seagrass Surveying

Over the past four years, Cork Sub Aqua Club (Cork SAC) has built up considerable experience in the surveying of seagrass beds through citizen science initiatives. This

survey work started with the seagrass beds in Oysterhaven Bay, the location where Cork SAC moors it's dive boat. Seagrass had been observed at Oysterhaven during training dives from the shore adjacent to the Coastguard Station. Seagrass was known to have high biodiversity value and considerable value as a sink for atmospheric carbon, and it was these factors that prompted the investigation into the local seagrass beds.

Initial work concentrated on the seagrass bed closest to the shore at Oysterhaven. This work included mapping the extent of the seagrass bed, an assessment of the health of the seagrass plants and the meadow as a whole, and survey of the biodiversity of the seagrass by divers trained to observe and record biodiversity and habitat types.

Assessment of aerial photographs of Oysterhaven Bay suggested that the presence of seagrass beds might be identified from these images. This theory was proved when two more seagrass beds were identified within Oysterhaven Bay by this process and confirmed by snorkelers and divers from Cork SAC. Examination of aerial photographs of Kinsale Harbour suggested that seagrass beds might be present here as well. In June 2025, Cork SAC undertook a number of dives and snorkels in Kinsale Harbour and these have confirmed the presence of significant seagrass beds.

Method

While the extent of the seagrass beds in Kinsale Harbour could be estimated for aerial images, this was accurately confirmed by snorkelers using hand held Garmin GPS devices. The GPS was in a watertight bag on the surface while the snorkelers worked together to trace the outer edge of the seagrass beds.

Divers undertook surveys of the biodiversity of the seagrass beds, recording the marine life using still and video photography.

Results

The GPS data was used to generate the extent of the seagrass beds (Figure 1). The seagrass beds are situated south of James Fort and between The Dock Beach and Charles Fort, lying to the west of the navigation channel into inner Kinsale Harbour. The GPS data will be made freely available for public access.

Biodiversity surveys indicate a rich and varied seagrass bed. Figures 2 to 11 show examples of the marine life present.

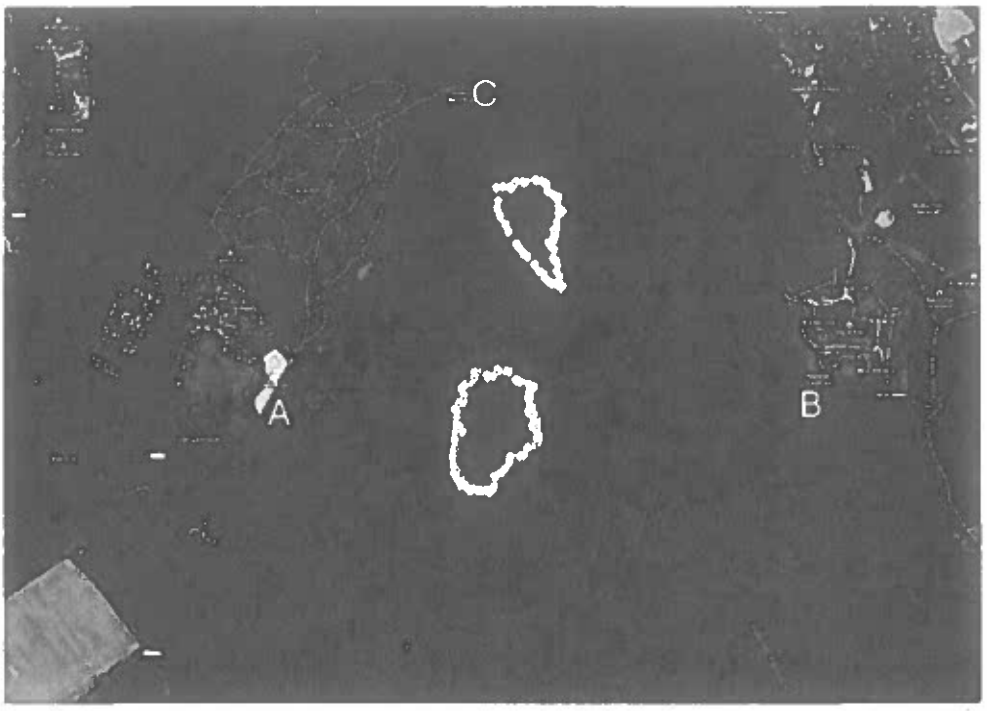


Figure 1. Extent of seagrass beds in Kinsale Harbour, between the Dock Beach (A), Charles Fort (B), and James Fort (C).

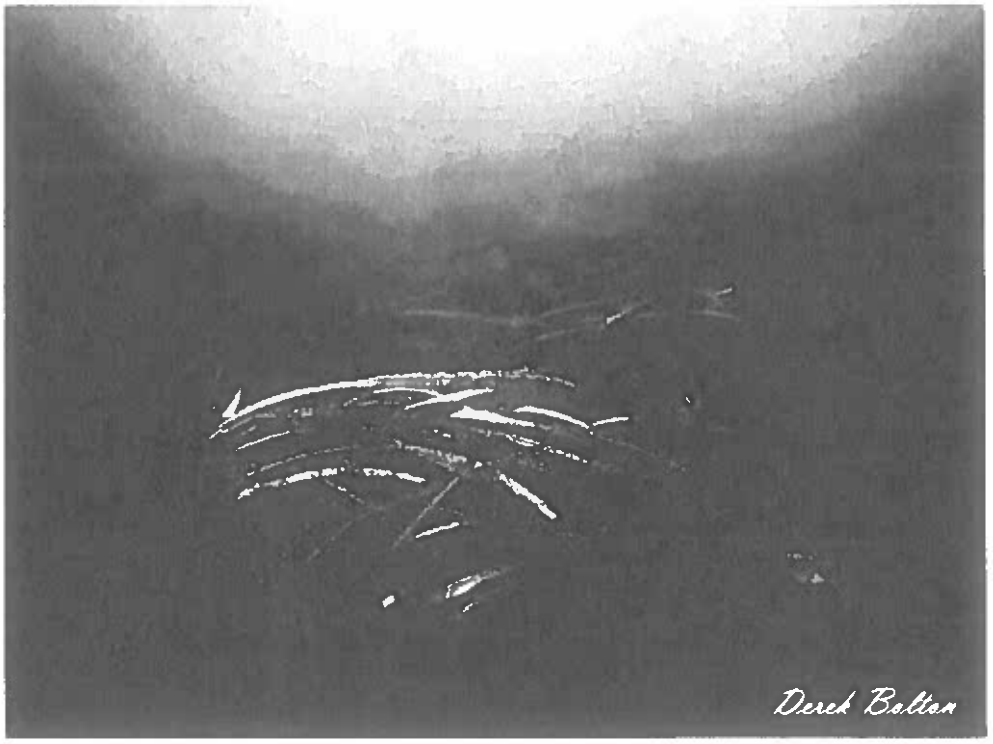


Figure 2. Seagrass bed in Kinsale Harbour. There is a yellow pipefish just right of centre.

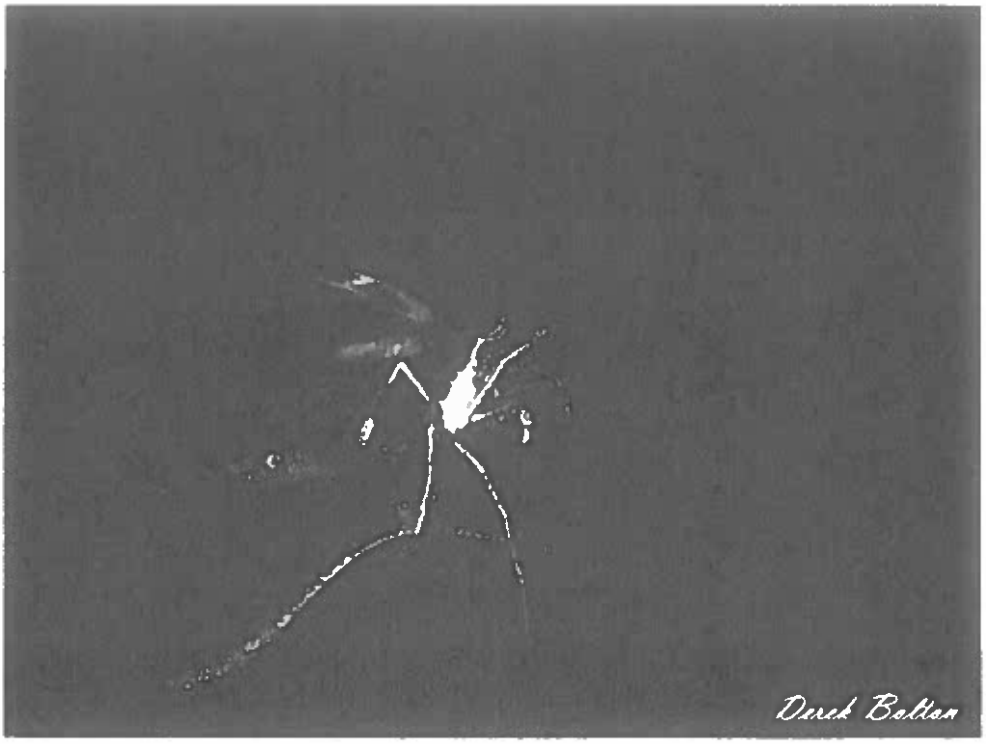


Figure 3. Long-legged spider crab in seagrass.

Figure 4. Peacock worm in seagrass bed in Kinsale Harbour.

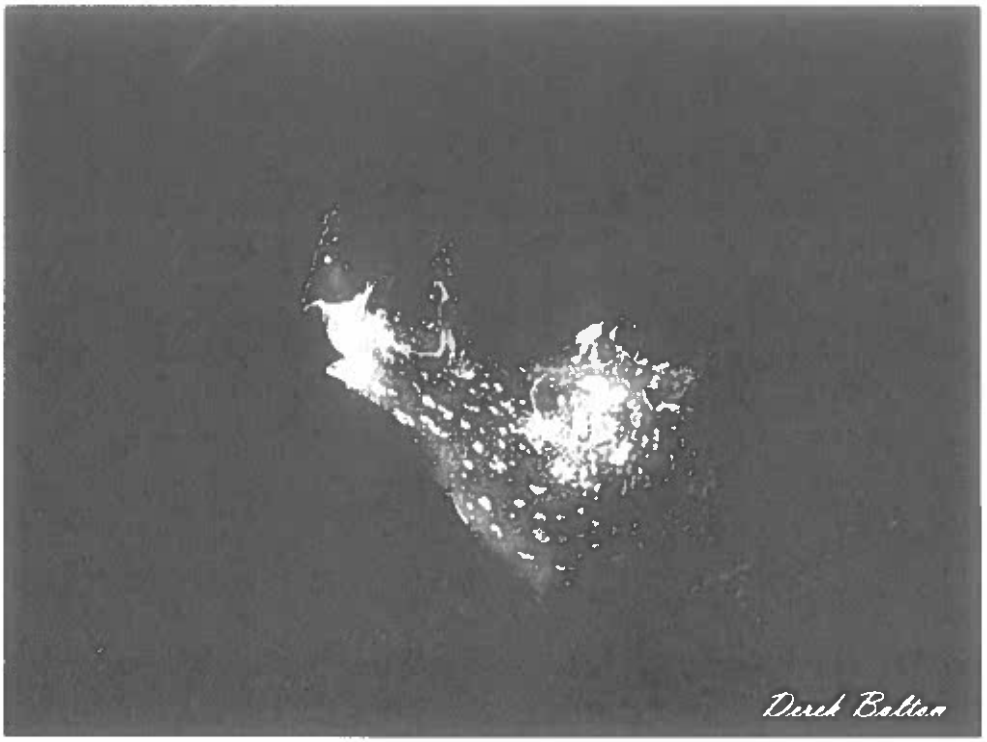


Figure 5. Sea Hare in seagrass. The Sea Hare is a type of marine mollusc.

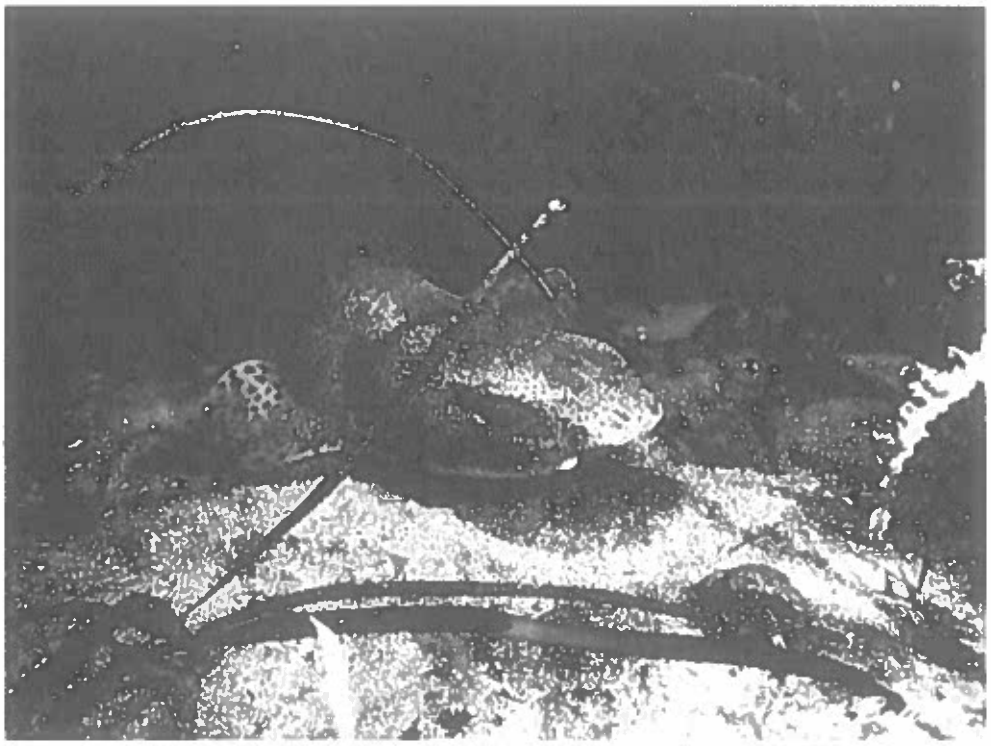


Figure 6. Lesser-spotted Catshark (Lesser-spotted Dogfish) and Hermit Crab.

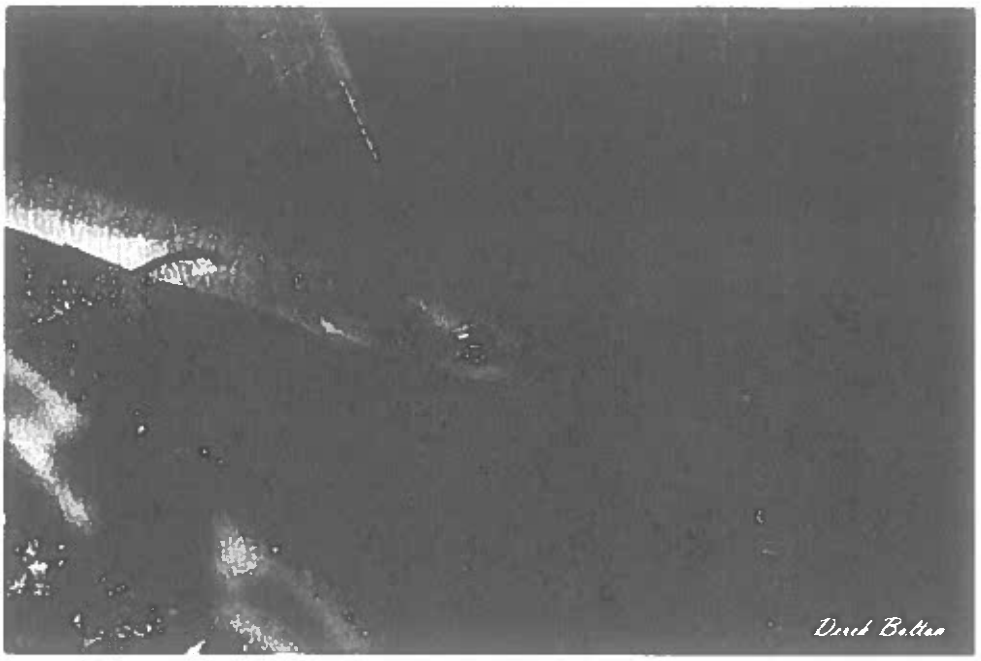


Figure 7. Detail of head of Snake Pipefish. This species is a specialist inhabitant of seagrass beds.

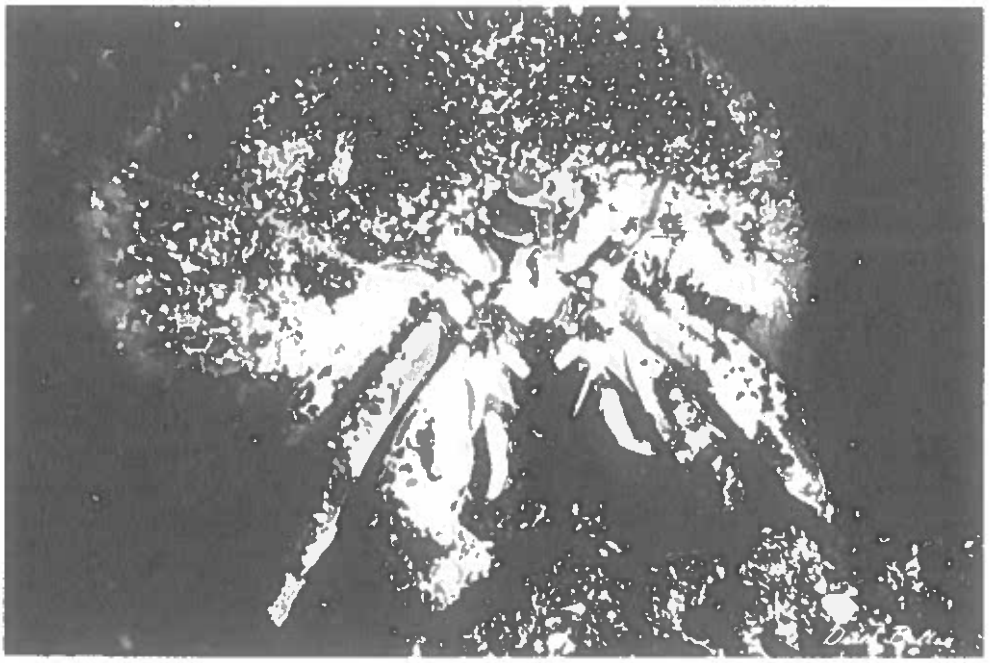


Figure 8. Hermit Crab in Kinsale Harbour seagrass. The furry appearance of the shell is due to a tiny animal called a hydroid that only grows on the shells of hermit crabs.

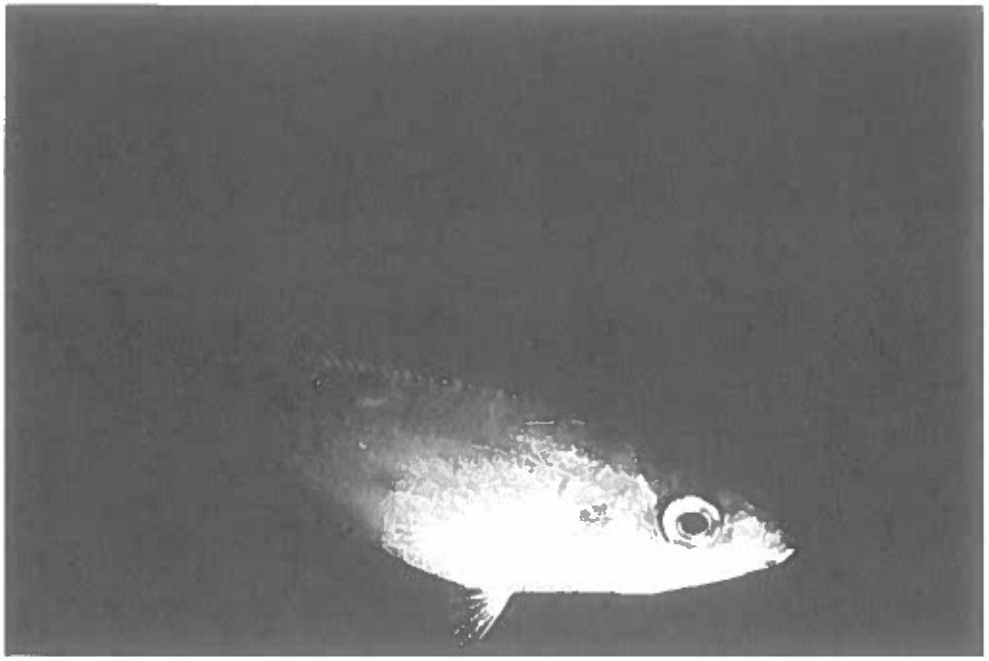


Figure 9. Juvenile Ballan Wrasse. The adults live on rocky reefs, but as with many fish species, the juveniles grow in the shelter of the seagrass bed.

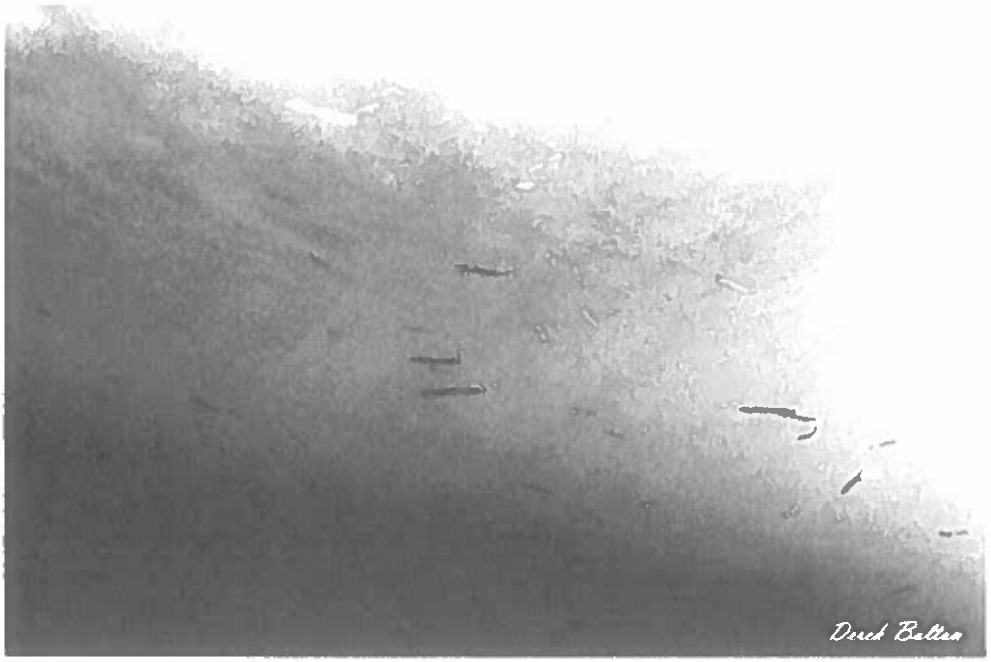


Figure 10. A shoal of sandeel swimming over the seagrass in Kinsale Harbour. These fish are eaten by a wide range of seabirds, marine mammals, and larger fish, but initial growth is often in seagrass.

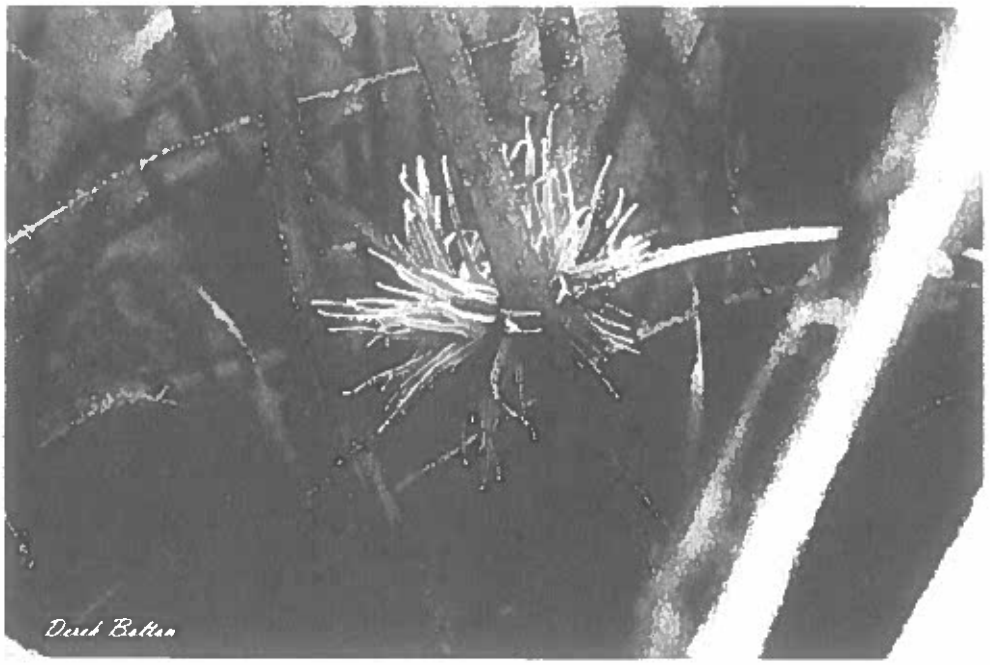


Figure 11. Snakelocks Sea Anemone – a common species in seagrass beds.

Conclusions

There are two areas of seagrass bed within Kinsale Harbour.

The plants within these beds appear to be healthy with dense growth of plants and little smothering (epiphytic) growth. This would be indicative of a growing bed that can sequester atmospheric carbon.

The seagrass contains high biodiversity. This includes seagrass specialists such as pipefish, juveniles of fish species that live in offshore habitats as adults, and adults and juveniles of commercially important species.

Seagrass bed habitat has been widely lost around the Irish coast due to human activity. It is important that this vital keystone habitat in Kinsale Harbour be preserved into the future.

KINSALE
KINSALE HARBOUR
Summer Cove
Upper Cove
LICENCED MUSSEL FARM AREA T05-472A
LEISURE BEACH ACTIVITES
YACHT CLUB SAILING / TRAINING
JUNIOR SAILING AREA
SURVEYED SEAGRASS AREA (Zostera Marina)
EXISTING SHRIMP POT FISHING AREAS
KINSALE HARBOUR
T05/472

T05/472A

23 Jun 25

Shellfish Pollution Reduction Programme

As required by Article 5 of the Shellfish Water Directive 2006/113/EC and
Section 6 of the Quality of Shellfish Waters Regulations, 2006 (S.I. No. 268 of 2006)

Characterisation Report Number 41

KINSALE HARBOUR SHELLFISH AREA
COUNTY CORK

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ABBREVIATIONS

AA	Appropriate Assessment
BOD	Biochemical Oxygen Demand
CFB	Central Fisheries Board
CSO	Combined Sewer Overflow
DED	District Electoral Division
DEHLG	Department of Environment Heritage and Local Government
DO	Dissolved Oxygen
EPA	Environmental Protection Agency
EU	European Union
Ha	Hectare
IPPC	Integrated Pollution Prevention Control
Kg	Kilogram
LU	Livestock Units
NACE	European industrial activity classification
MI	Marine Institute
NPWS	National Parks and Wildlife Service
OSWWTS	On-Site Waste Water Treatment System
P.E.	Population Equivalent
PRP	Pollution Reduction Programme
RBD	River Basin District
RBMP	River Basin Management Plan
SEA	Strategic Environmental Assessment
SFPA	Sea Fisheries Protection Authority
SWMC	Shellfish Waters Management Committee
TCE	Tetrachloroethylene
WFD	Water Framework Directive
WSIP	Water Services Investment Programme
WTP	Water Treatment Plant
WWTP	Waste Water Treatment Plant

1.0 INTRODUCTION

Article 5 of the Shellfish Directive (2006/113/EC) and section 6 of the Quality of Shellfish Waters Regulations (S.I. No. 268 of 2006) require the development of Pollution Reduction Programmes (PRPs) for designated shellfish areas in order to support shellfish life and growth and to contribute to the high quality of directly edible shellfish products. Shellfish PRPs relate to bivalve and gastropod molluscs, including oysters, mussels, cockles, scallops and clams. They do not cover shellfish crustaceans such as crabs, crayfish and lobsters.

1.1 Aims and responsibility

The objectives of Shellfish PRPs are to:

- Protect or improve water quality in designated shellfish areas;
- Achieve compliance with water quality parameter values outlined in Annex I of the Shellfish Waters Directive (2006/113/EC) and Schedules 2 and 4 of the Quality of Shellfish Waters Regulations (S.I. No. 268 of 2006);
- Determine the factors responsible for any non-compliances with the water quality parameter values; and
- Ensure that implementation of the Shellfish PRPs does not lead, directly, or indirectly, to increased pollution of coastal and brackish waters.

Under the Regulations, the Department of Communications, Marine and Natural Resources is responsible for the development of Shellfish PRPs. However, this responsibility was transferred to the Department of the Environment, Heritage and Local Government (DEHLG) on 5th November 2008. An Inter-Departmental Inter Agency Shellfish Waters Management Committee (SWMC) supports the Department in the development of the Shellfish PRPs.

The Regulations also place an obligation on every public authority to perform its functions in a manner that promotes compliance with the Directive and the Regulations, and to take such actions as are necessary to secure compliance with the Directive and the Regulations and with the Shellfish PRPs.

1.2 Shellfish water quality parameters

Compliance with the directive is measured against achievement of shellfish water quality parameter values outlined in Annex I of the Shellfish Waters Directive (2006/113/EC) and Schedules 2 and 4 of the Quality of Shellfish Waters Regulations (S.I. No. 268 of 2006). Table 1 summarizes these values. Mandatory (I) values must be fully achieved while it must be endeavoured to achieve guideline values (G).

TABLE 1 - Parameters listed in Annex I of the Shellfish Water Directive

Physical	Guideline Values (G)	Mandatory Values (I)
pH (pH units)		9 pH units
Temperature (°C)	A discharge affecting shellfish waters must not cause the	No mandatory values set in the Directive

	temperature of the waters to exceed by more than 2°C the temperature of waters not so affected	
Colouration (after filtration) (mg Pt/l)		A discharge affecting shellfish waters must not cause the colour of the waters after filtration to deviate by more than 10 mg Pt/l from the colour of unaffected waters
Suspended Solids (mg/l)		A discharge affecting shellfish waters must not cause the suspended solid content of the waters to exceed the content in unaffected waters by more than 30%
Salinity (‰)	12 to 38‰	≤ 40‰ A discharge affecting shellfish waters must not cause their salinity to exceed the salinity of unaffected waters by more than 10%
Chemical	**Guideline Value (G)**	**Mandatory Value (I)**
Dissolved oxygen (Saturation %)	≥ 80%	≥ 70% Should an individual measurement indicate a value lower than 70%, measurements shall be repeated An individual measurement may only indicate a value of less than 60% if there are no harmful consequences for the development of shellfish colonies
Petroleum hydrocarbons		Hydrocarbons must not be present in the shellfish water in such quantities as to: - produce a visible film on the surface of the water and or a deposit on the shellfish - have harmful effects on the shellfish
Organohalogenated substances	The concentration of each substance in shellfish flesh must be so limited that it contributes in accordance with Article 1 (of the Directive), to the high quality of shellfish products	The concentration of each substance in the shellfish water or in shellfish flesh must not reach or exceed a level which has harmful effects on the shellfish larvae
Metals (Ag, As, Cd, Cr, Cu, Hg, Ni, Pb and Zn) (mg/l)	The concentration of each substance in shellfish flesh must be so limited that it contributes in accordance with Article 1 (of the Directive), to the high quality of shellfish products	The concentration of each substance in the shellfish water or in the shellfish flesh must not exceed a level which gives rise to harmful effects on the shellfish and their larvae The synergic effects of these metals must be taken into consideration
Guideline		
Faecal coliforms (per 100 mL)	≤ 300 per 100 mL in the shellfish flesh and intervalvular liquid	No mandatory value set in the Directive

Substances affecting the taste of shellfish		Concentration lower than those to impair the taste of the shellfish
Saxitoxin (produced by dinoflagellates)	No limit given	No limit given

1.4 Development of the Shellfish Pollution Reduction Programmes

The Directive and Regulations require that any non compliances with the shellfish water quality parameter values are identified. The Directive and Regulations further require that the factors responsible for such non compliances are identified.

Information on impacts and pressures has therefore been collated in an individual characterisation report for each shellfish site from available inventories. The likelihood of the pressures to impact on shellfish water quality parameter values in the shellfish areas has been estimated.

Individual site Pollution Reduction Programmes (PRPs) and a supporting toolkit of measures outline the measures which can be used to control pressures where necessary to protect and improve water quality in a specific shellfish area.

The 2009 Shellfish PRPs (including the supporting characterisation reports and toolkit of measures) represent an initial phase of Shellfish PRP development, drawing on available information sources. Their development has been a desk-based exercise and they provide a good indication of the main pressures likely to be impacting on shellfish water quality and the measures that can be used to control those pressures. Ongoing assessment and monitoring of shellfish waters will be used to confirm the effectiveness of these programmes and to refine the programmes where necessary. As the shellfish monitoring database grows, and as programmes are implemented, incremental changes will be made to ensure compliance with the standards and objectives established.

PRPs produced during 2009 supersede Action Programmes which were developed in 2006 for the 14 original shellfish areas.

1.5 Assessment of Shellfish Pollution Reduction Programmes

A Strategic Environmental Assessment (SEA) of the Shellfish PRPs and supporting toolkit of measures has been carried out in accordance with the requirements of the EU Strategic Environmental Assessment Directive (2001/42/EC). SEA is a process for evaluating, at the earliest appropriate stage, all of the possible environmental effects of plans or programmes before they are adopted while giving the public and other interested parties an opportunity to comment and to be kept informed of decisions and how they were made. The assessment of the PRPs resulted in mitigation of some of the measures contained in the PRPs and toolkit of measures that were identified as likely to lead to adverse effects on other aspects of the environment. The reports associated with the SEA process can be downloaded from .

An 'Appropriate Assessment' of the Shellfish PRPs has been carried out in parallel with the SEA assessment in accordance with the requirements of the EU Habitats Directive (92/43/EEC). Appropriate Assessment is a process for evaluating the implications of plans or programmes for sites which have been designated for the protection and conservation of habitats and species of European importance. The reports associated with the Appropriate Assessment can be downloaded from .

1.6 Links with the River Basin Management Plans

The EU Water Framework Directive (2000/60/EC) provides a framework for the protection and restoration of the aquatic environment and terrestrial ecosystems and wetlands directly depending on the aquatic environment. In accordance with the requirements of the directive, River Basin Management Plans (RBMPs) were published in draft form in December 2008 with the final RBMPs published in December 2009. They are the primary plans in place in relation to the water environment for the foreseeable future.

Article 13(5) of the WFD states that 'river basin management plans may be supplemented by the production of more detailed programmes and management plans for sub-basin, sector, issue, or water type, to deal with particular aspects of water management'. Shellfish PRPs are an example of such programmes. In addition, Article 13(4) and Annex VII of the WFD requires that RBMPs include 'a register of any more detailed programmes and management plans for the River Basin District dealing with particular sub-basins, sectors, issues or water types, together with a summary of their contents'. The Shellfish PRPs are included in the registers of each of the River Basin Districts.

Articles 4 (1)(c) and 4 (2) of the WFD specify that, in relation to protected areas, where more than one of set of objectives relate to a given body of water, the most stringent shall apply. Designated shellfish areas are included in the WFD register of protected areas provided for in Articles 6 and 7 of the directive.

The WFD strengthens and consolidates a number of existing environmental directives while repealing others on a phased basis. The Shellfish Directive is due to be repealed by the WFD in 2013. Shellfish PRPs are therefore closely aligned with the RBMPs.

1.7 Layout of the Shellfish Pollution Reduction Programmes

Characterisation Report

- **Section 1**
  Section 1 is an introductory section which puts the Characterisation Reports in context and outlines their contents.

- **Section 2**
  Section 2 describes the general characteristics of the designated shellfish areas as well as their contributing catchments.

- **Section 3**
  Section 3 describes water quality in the designated shellfish areas.

- **Section 4**
  Section 4 consists of a series of maps illustrating the general characteristics of the shellfish areas and catchments, as well as the marine and land-based pressures in the catchments.

- **Section 5**
  Section 5 provides a series of tables summarising the marine and land-based pressures in the catchments. The likelihood of the pressures to impact on shellfish water quality parameters is discussed. A summary is also provided highlighting the key pressures and potential secondary pressures which are most likely to be impacting on shellfish water quality parameters. The discussions in this section draw on available information including information generated during the WFD implementation process and geographical features of significance. The differing nature of the pressures are also taken into account as pressures vary substantially in terms of how severely they are likely to impact on shellfish water quality parameters.

Pollution Reduction Programmes

- The Pollution Reduction Programmes summarise the specific measures for controlling the key and potential secondary pressures, identified in this characterisation report, which are most likely to be impacting on shellfish water quality in Kinsale shellfish area. This can be downloaded from [illegible]

Toolkit of Measures

- The supporting toolkit of measures outlines all of the measures available for controlling all of the pressures which can impact on shellfish water quality. Due to the close alignments between the Shellfish PRPs and the RBMPs, the toolkit is drawn from the programme of measures contained within the RBMPs. This strengthens the integration of shellfish management and wider water quality management policy in Ireland. The toolkit can be downloaded from [illegible].

2.0 GENERAL CHARACTERISTICS

Name	Kinsale Shellfish Area
Map number	41
Year of designation	2009
Area	0.7 km^2
River Basin District	South Western RBD
County	Cork
Location of sampling point	51 deg 42.000 min North (Lat) 8 deg 32.700 min West (Long)
Catchment area	603.89 km^2
Catchment area within 20 km zone	226.19 km^2

Kinsale is situated in County Cork in the South Western River Basin District (Map 1). The designated shellfish area is 0.7 km^2 in area and is situated along the southern shoreline of the River Bandon. The shellfish area extends east of Kilnacloona to the bridge at the entrance to Whitecastle Creek and from the bridge to the northern shoreline as far as Cappagh back to Kilnacloona.

The contributing catchment of the shellfish area is 603.89 km^2 in area (Map 3). The Bandon River is the main freshwater input and rises at Owen Hill west of Dunmanway and, flowing by Dunmanway, Bandon and Inishannon, enters Kinsale Harbour. Its main tributaries are the Caha, the Blackwater and the Brinny.

The population of the catchment is approximately 25,633 and there are three main towns. Kinsale is the largest with a population of 2,298 followed by Bandon with a population of 1,721 and Inishannon with a population of 678 (CSO 2006).

Cattle and sheep number in the catchment are 63,190 cattle and 6,165 respectively.

2.1 Protected areas

The designated shellfish area lies within Kinsale cSAC (Map 11). Nutrient sensitive areas in the catchment include upper and lower Bandon estuary. Drinking water sources include the Bandon River.

2.2 Shellfish growing activity

Table 2 summarises the number and area of shellfish licensed areas within the designated shellfish area. Oyster cultivation is predominant in the area (Map 2). Production for 2006 was 3 tonnes of gigas oysters.

TABLE 2 - Shellfish licensed areas

Shellfish types	Number	Area	% Area
Abalone	0	0	0 %
Clams	0	0	0 %
Cockles	0	0	0 %

Shellfish types	Number	Area	% Area
Lobsters	0	0	0 %
Scallops	0	0	0 %
Mussels	0	0	0 %
Oysters	-	0.9 km²	100 %
Sea Urchins	0	0	0 %
Periwinkles	0	0	0 %
Seaweed	0	0	0 %
Other	0	0	0 %

3.0 WATER QUALITY IN THE SHELLFISH AREA

Dedicated shellfish monitoring data has been collated and compared with shellfish water quality parameter mandatory and guideline values outlined in Annex I of the Shellfish Waters Directive (2006/113/EC) and Schedule 2 and 4 of the Quality of Shellfish Waters Regulations (S.I. No. 268 of 2006) (Table 1).

Additional monitoring data from other monitoring programmes has also been collated in order to highlight any water quality issues in the vicinity of the shellfish areas. This can aid in the identification of the pressures most likely to impact on the shellfish areas and thereby in the identification of any measures to be applied. Datasets were collated from the Environmental Protection Agency (EPA), the Marine Institute (MI) and the Sea Fisheries Protection Authority (SFPA). Where applicable these additional monitoring data were compared with the shellfish water quality parameter mandatory and guideline values outlined in Annex I of the Shellfish Waters Directive (2006/113/EC) and Schedules 2 and 4 of the Quality of Shellfish Waters Regulations (S.I. No. 268 of 2006) (Table 1).

Marine Institute Shellfish Monitoring Programme

The MI carries out shellfish monitoring at designated shellfish areas. This dedicated shellfish monitoring programme involves analysing for general components, metals and organics in both water and biota samples. The results have been compared with the shellfish mandatory and guideline values outlined in Table 1.

For this designated shellfish area, one water sample was available from 2004 and one biota sample from 2008. The mandatory and guide values outlined in Table 1 were not breached in these samples.

Faecal coliform biota results were also available from the MI from November 2008, February 2009, May 2009 and August 2009. The shellfish guideline value for faecal coliforms in biota outlined in Table 1 was breached in the May and August 2009 samples.

EPA Marine Monitoring Programme

The EPA Marine Monitoring Programme analyses for general components in water samples at a large number of marine sites around Ireland.

There is 1 EPA site located in Kinsale with monitoring data available from the period 2006 to 2008 for pH and dissolved oxygen. The values outlined in Table 1 for these parameters were not breached in this sample.

WFD Monitoring Programme

WFD status classifications from the WFD monitoring programme apply at the water body scale and are generally based on several samples surveys targeting a variety of parameters including biological, physico-chemical, chemical and hydromorphological elements. The monitoring information on which the marine status classifications are

based was collected by the EPA, the MI, the National Parks and Wildlife Service (NPWS) and the Central Fisheries Board (CFB) between 2005 and 2008.

The WFD status of the transitional water body within which the shellfish area is situated, is 'moderate' and therefore unsatisfactory, reflecting unsatisfactory levels of dissolved oxygen, biochemical oxygen demand and chromium. The upper estuary which discharges into the designated area is 'moderate' and therefore unsatisfactory, reflecting the issues with dissolved oxygen and biochemical oxygen demand. There are also three tributaries which are discharging into the designated area, the Rockhouse, Ballinadee and Ballyvolane Rivers, and all of these are 'poor' status, but all of these status's were extrapolated from similar water body types (Map 12).

Shellfish Flesh Monitoring Programme

Shellfish flesh classifications (carried out under the European Communities (Live Bivalve Molluses) (Health Conditions for Production and Placing on the Market) Regulations, 1996 (S.I. No. 147 of 1996)) indicate faecal contamination in shellfish flesh. Sampling is carried out by the Sea Fisheries Protection Authority (SFPA) on at least a monthly basis.

The licensed area within Kinsale Channel are classified as Class B meaning that shellfish may be placed on the market for human consumption only after treatment in a purification centre or after relaying so as to meet the health standards for live bivalve molluses laid down in the EC Regulation on food safety (Regulation (EC) No 853 2004). This indicates faecal contamination in this shellfish area.

Overall Water Quality

The dedicated shellfish samples available for this shellfish area were found to be non-compliant with shellfish guideline values for faecal coliforms in biota outlined in Annex I of the Shellfish Waters Directive (2006 113 I C) and Schedule 4 of the Quality of Shellfish Waters Regulations (S.I. No. 268 of 2006) (Table 1). Ongoing shellfish monitoring will strengthen the assessment of compliance status at this shellfish area.

The results of the WFD monitoring programme indicate that there are water quality issues with dissolved oxygen, biochemical oxygen demand and chromium levels within the area and in some of the waters discharging in the vicinity of this shellfish area. However, the available monitoring data is all compliant with the shellfish standards for these substances.

The shellfish flesh classification indicates faecal contamination in the shellfish area.

4.0 CHARACTERISATION MAPS

The following series of maps illustrate the general characteristics of the designated shellfish area and its contributing catchment, as well as the marine and land-based pressures that could potentially impact on the shellfish area. The pressures are further divided into point source pressures, diffuse source pressures and morphological pressures

Some of the point source pressures are symbolised according to whether they are 'at risk' or 'not at risk'. These risk designations were developed during the WFD implementation process. Some of the designations date back to the Article V characterisation process in 2004 and 2005 but many of the risk designations were updated in 2008 to feed into the draft RBMPs. The risk designations are based on a variety of information, for example, waste water treatment plants can be designated as 'at risk' because they are serving a larger population then they were designed to cater for or because their discharges are impacting on water quality. Section 5 of this characterisation report provides the detail behind the risk designations for each of the pressures and discusses their likelihood to be impacting on shellfish water quality parameters.

Whilst the risk designations under the WFD provide a useful screening tool for pressures, their relevance in terms of any water quality issues measured in Shellfish Waters has been assessed in further detail to identify key pressures at a particular site. For example the WFD risk may be based on particular impacts to freshwater ecology which are not pertinent to the shellfish water status.

TABLE 3 - List of maps

Map No.	Map Title	Details
General Characteristics Maps		
MAP 1	Designated shellfish area	Designated shellfish area with summary statistics.
MAP 2	Licensed shellfish areas	Department of Agriculture, Fisheries and Food register of licensed shellfish areas within the designated shellfish area.
MAP 3	Contributing catchment	Nested river water bodies and inter-coastal freshwater bodies discharging in the vicinity of the designated shellfish area.
MAP 4	Topography	Topography of the contributing catchment.
MAP 5	Soil wetness	Soil wetness which indicates drainage characteristics
MAP 6	Vulnerability of groundwaters to pathogens from subsoil discharges	Potential risk of pathogens from sub-soils discharges reaching groundwaters. Based on vulnerability, presence of alluvium, mineral content of soils, wetness, aquifer type, subsoil depth and subsoil permeability.

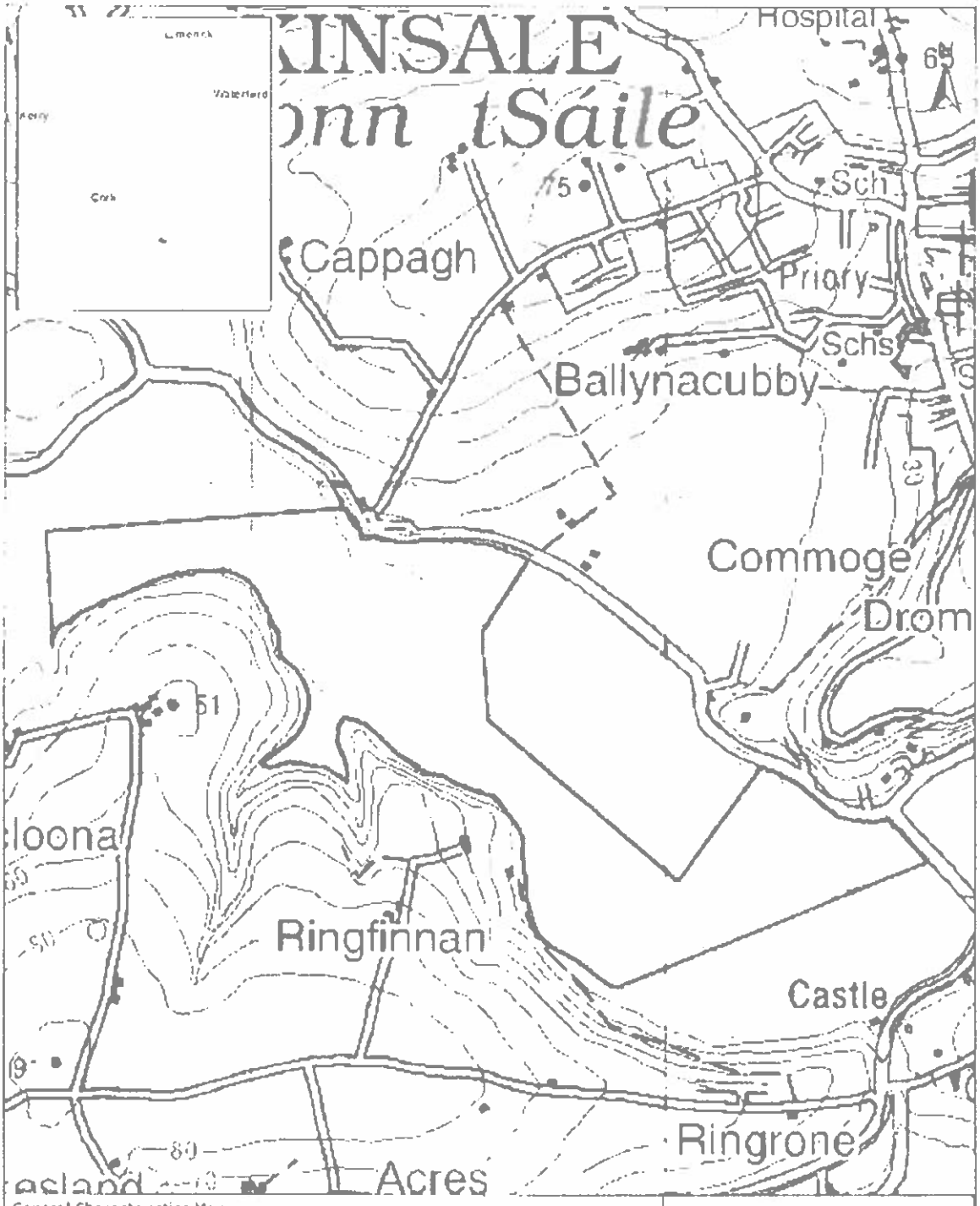
Map No.	Map Title	Details
MAP 7	Vulnerability of groundwaters to phosphorus from subsoil discharges	Potential risk of phosphorus from sub-soils discharges reaching groundwaters. Based on vulnerability, presence of alluvium, mineral content of soils, wetness, aquifer type, subsoil depth and subsoil permeability.
MAP 8	Vulnerability of surface waters to pathogens from subsoil discharges	Potential risk of pathogens from sub-soils discharges reaching surface waters. Based on vulnerability, presence of alluvium, mineral content of soils, wetness, aquifer type, subsoil depth and subsoil permeability.
MAP 9	Vulnerability of surface waters to phosphorus from subsoil discharges	Potential risk of phosphorus from sub-soils discharges reaching surface waters. Based on vulnerability, presence of alluvium, mineral content of soils, wetness, aquifer type, subsoil depth and subsoil permeability.
MAP 10	Likelihood of inadequate percolation in subsoils	Likelihood of inadequate percolation in subsoils. Based on aquifer type, vulnerability and subsoil permeability.
MAP 11	Designated protected areas	SACs, SPAs, freshwater pearl mussel areas, recreational waters, drinking waters, nutrient sensitive areas, water dependant habitats and RAMSAR sites within the contributing catchment.
MAP 12	WFD surface water status	River, lake, transitional and coastal water body status resulting from the WFD monitoring programme.
MAP 13	EPA diffuse risk assessment	Water body based risk to waters from diffuse sources. Based on the percentages of diffuse land cover per water body including peatlands, coniferous forestry, agriculture and urban areas.
Marine Pressures Maps		
Point Source Pressures		
MAP 14	Marine finfish farms	Marine finfish farms in the vicinity of the designated shellfish area. Taken from the Marine Atlas.
Morphology Pressures		
MAP 15	Fishing gear activity	Fishing gear activity in the vicinity of the designated shellfish area. Taken from the Marine Atlas.
MAP 16	Structures	Marine morphology structures such as bridges and causeways

Map No.	Map Title	Details
MAP 17	Physical modifications	Physical modifications such as shoreline reinforcement, embankments, reclaimed land, capital and maintenance dredging, aggregate removal, dumping at sea and heavily modified waters within the designated shellfish area.
Land-based Pressures Maps		
Point Source Pressures		
MAP 18	Municipal waste water systems	Urban waste water treatment plants and combined sewer overflows within the contributing catchment. These are symbolized based on their risk designations.
MAP 19	Agricultural and aquacultural point source pressures	Pig units, and freshwater fish farms within the contributing catchment.
MAP 20	Industrial point source pressures	Industrial IPPCs, Section 4s, water treatment plants, abstractions, mines, quarries, landfills and contaminated sites within the contributing catchment. These are symbolized based on their risk designations.
Diffuse Source Pressures		
MAP 21	On-site waste water systems	On-site waste water treatment plants within the contributing catchment.
MAP 22	Dairy and drystock livestock units	Dairy and drystock livestock units per hectare of farmed land within each DED in the contributing catchment.
MAP 23	Nitrogen fertiliser usage	Nitrogen fertiliser usage per hectare of farmed land within each DED in the contributing catchment.
MAP 24	Phosphorus fertiliser usage	Phosphorus fertiliser usage per hectare of farmed land within each DED in the contributing catchment.
MAP 25	Forestry types with acidification risk areas	Forest cover in the contributing catchment with areas identified as being at risk from acidification.
MAP 26	Forestry types with eutrophication risk areas	Forest cover in the contributing catchment with areas identified as being at risk from eutrophication.
MAP 27	Forestry types with sedimentation risk areas	Forest cover in the contributing catchment with areas identified as being at risk from sedimentation.
Morphology Pressures		

Map No.	Map Title	Details
MAP 28	Structures	Barriers to migration, both natural and man-made in the contributing catchment.
MAP 29	Physical modifications	Channelisation, heavily modified and artificial water bodies in the contributing catchment.

MAP 1 - Designated shellfish area

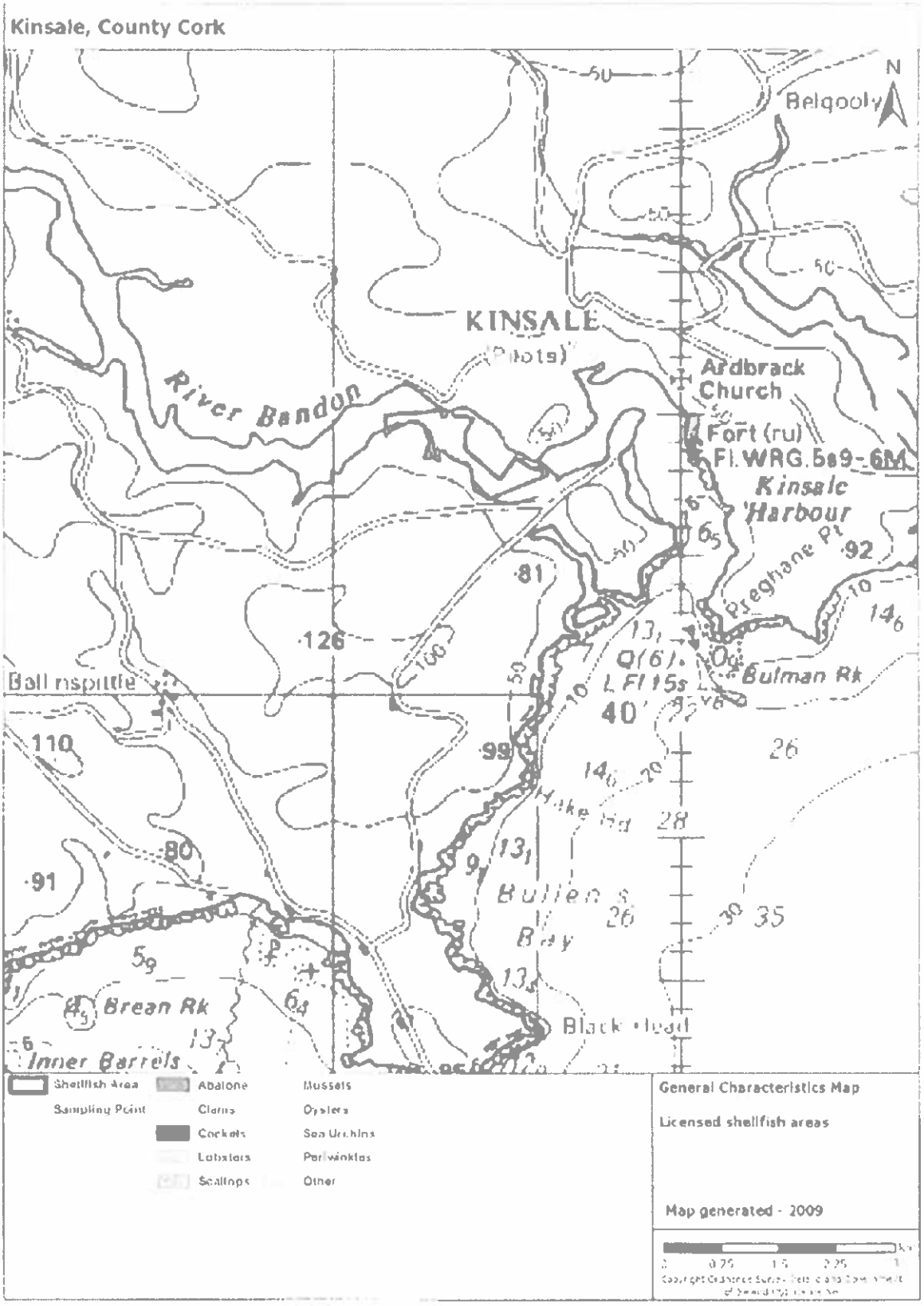
Kinsale, County Cork



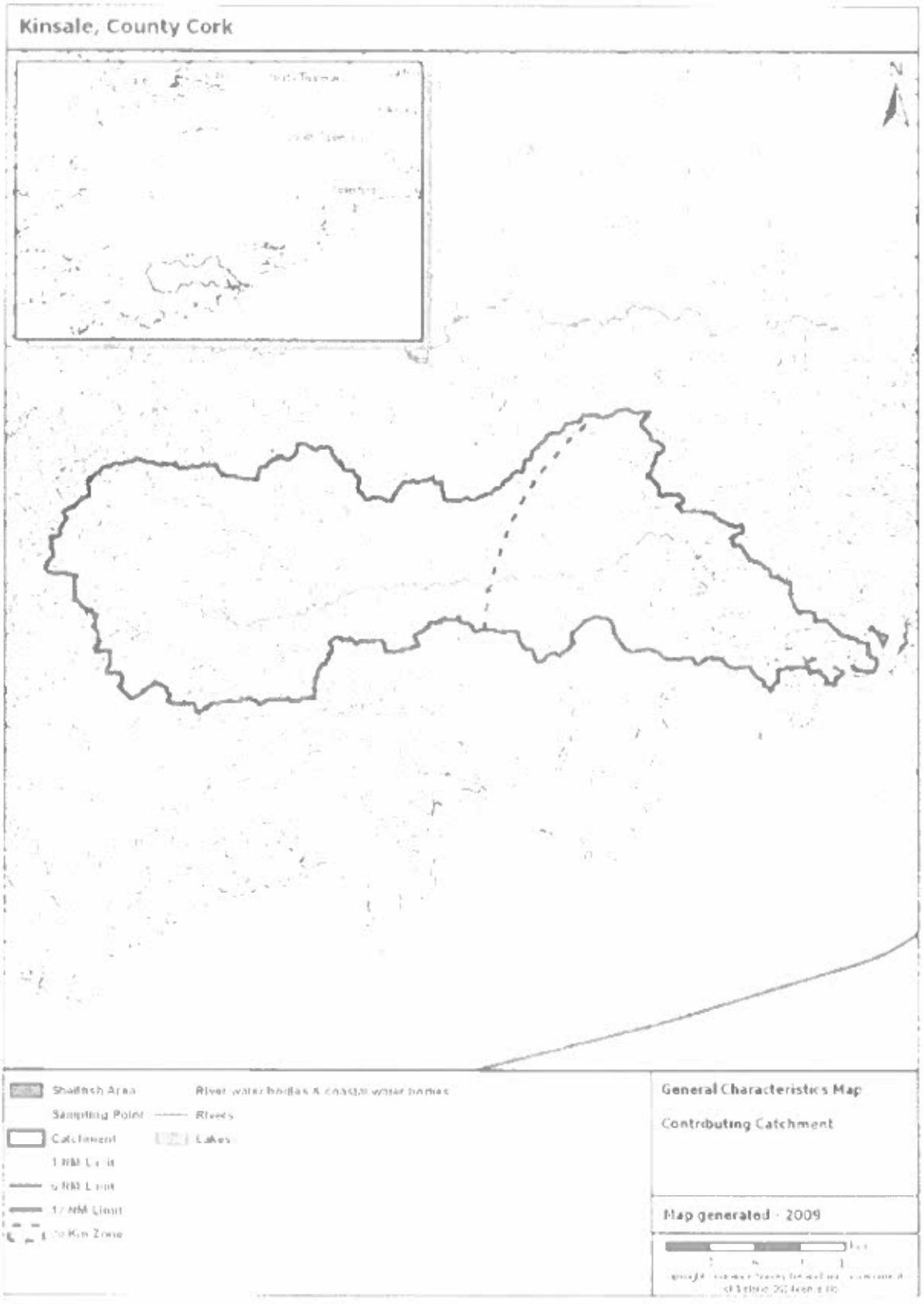
General Characteristics Map	
Designated Shellfish Area	No. 41 - Kinsale, County Cork
Area of Designated Shellfish Area	0.67 km2
Area of Catchment	603.89 km2

Shellfish Area
Sampling Point

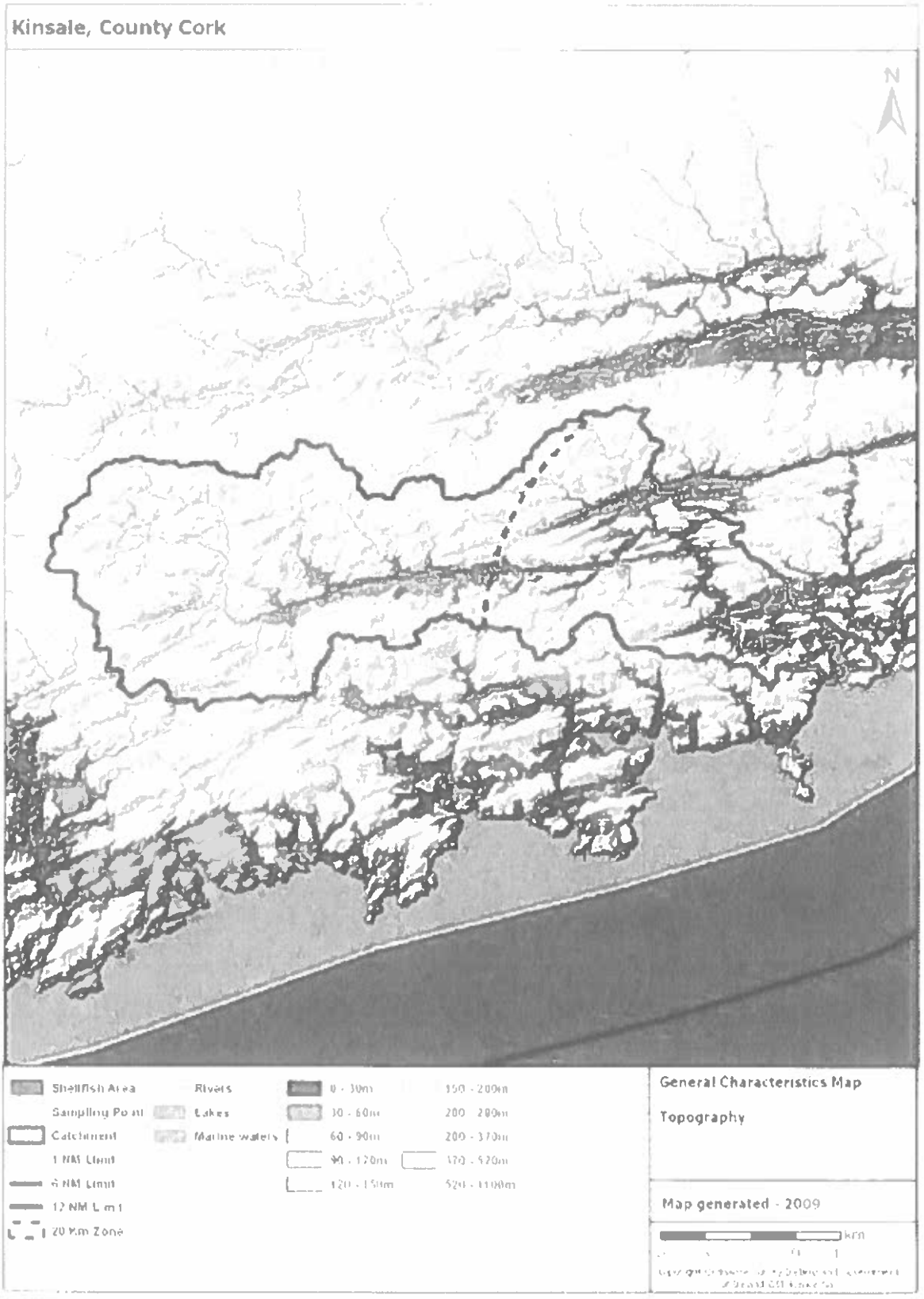
MAP 2 - Licensed shellfish areas



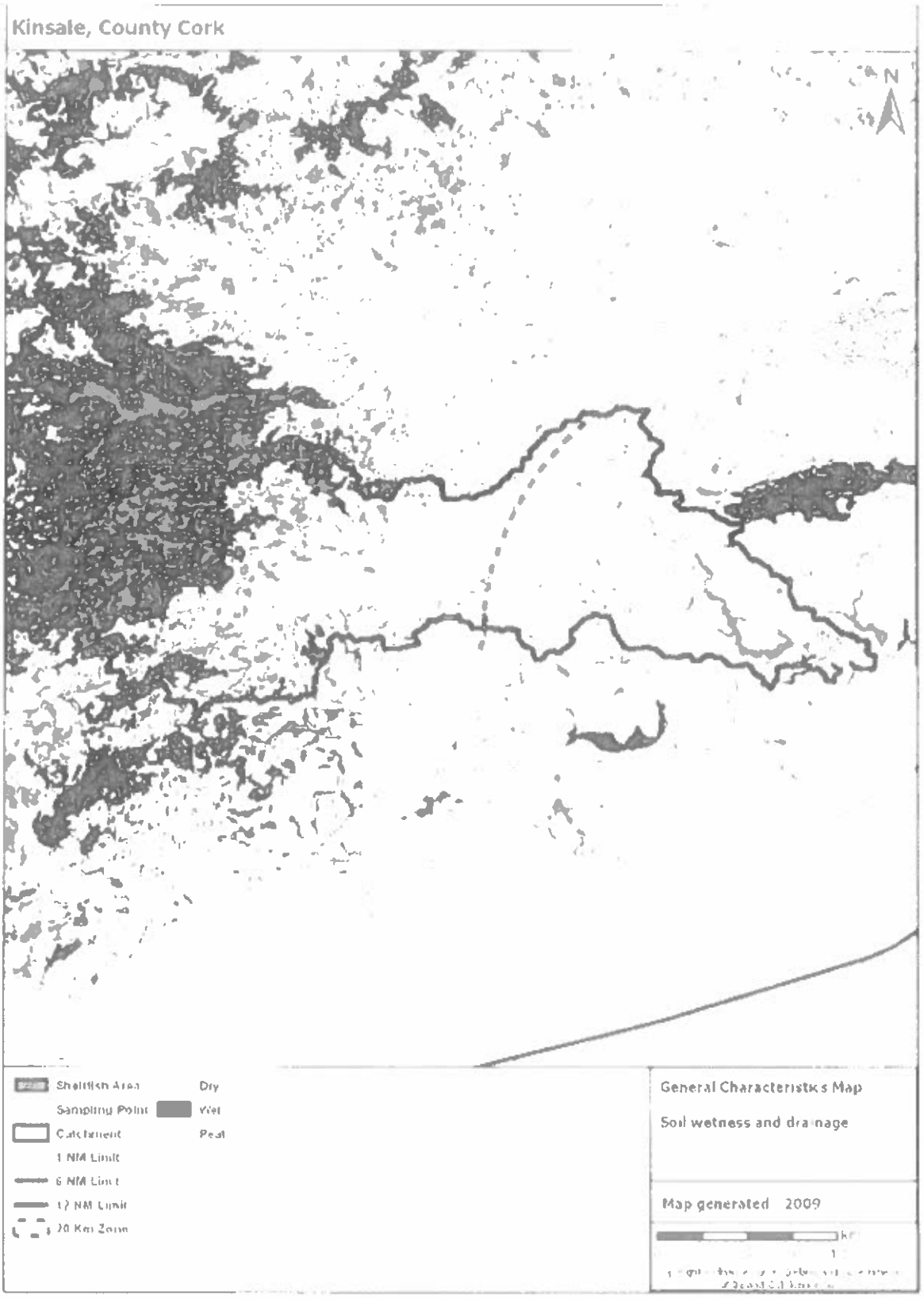
MAP 3 - Contributing catchment



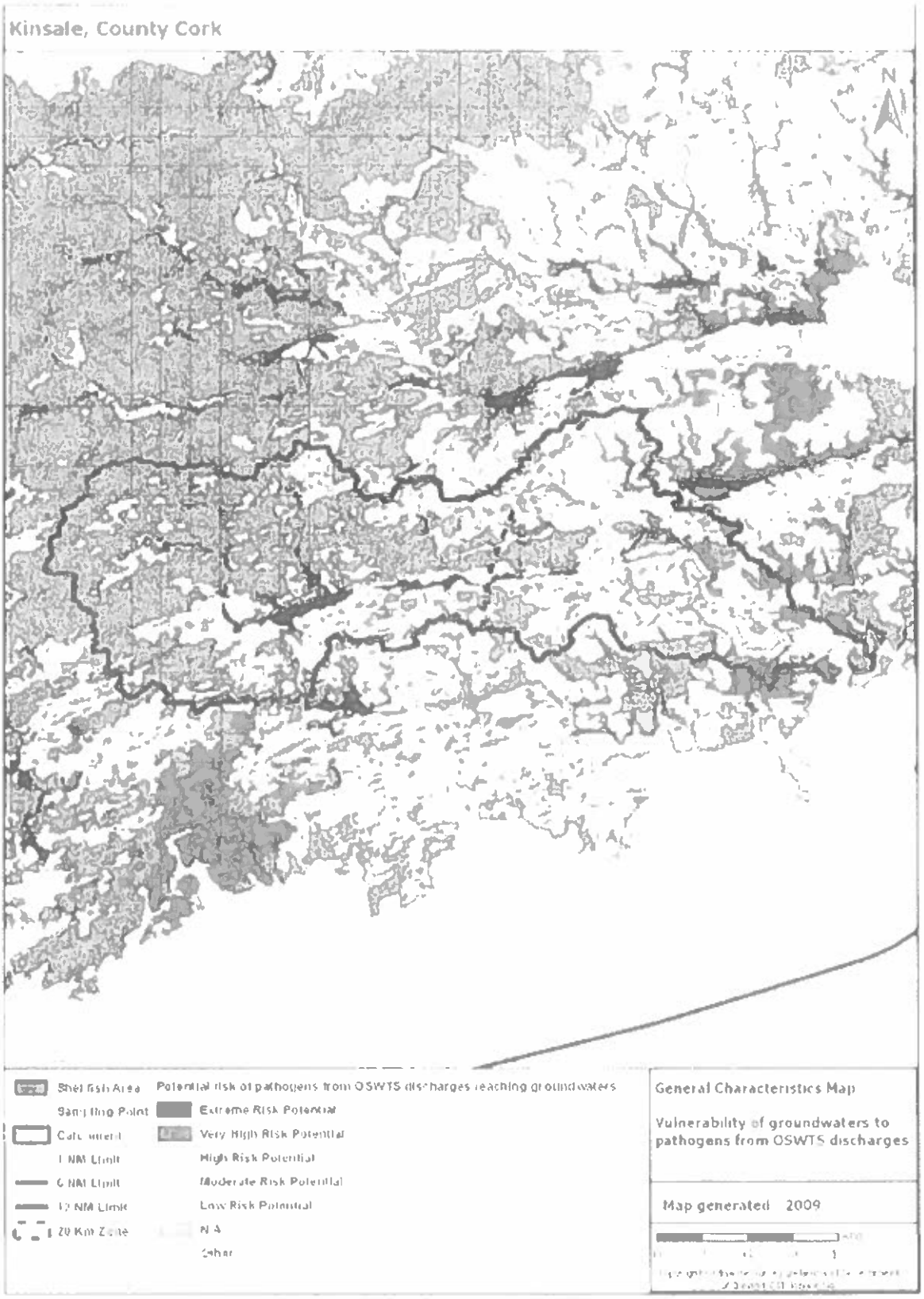
MAP 4 Topography



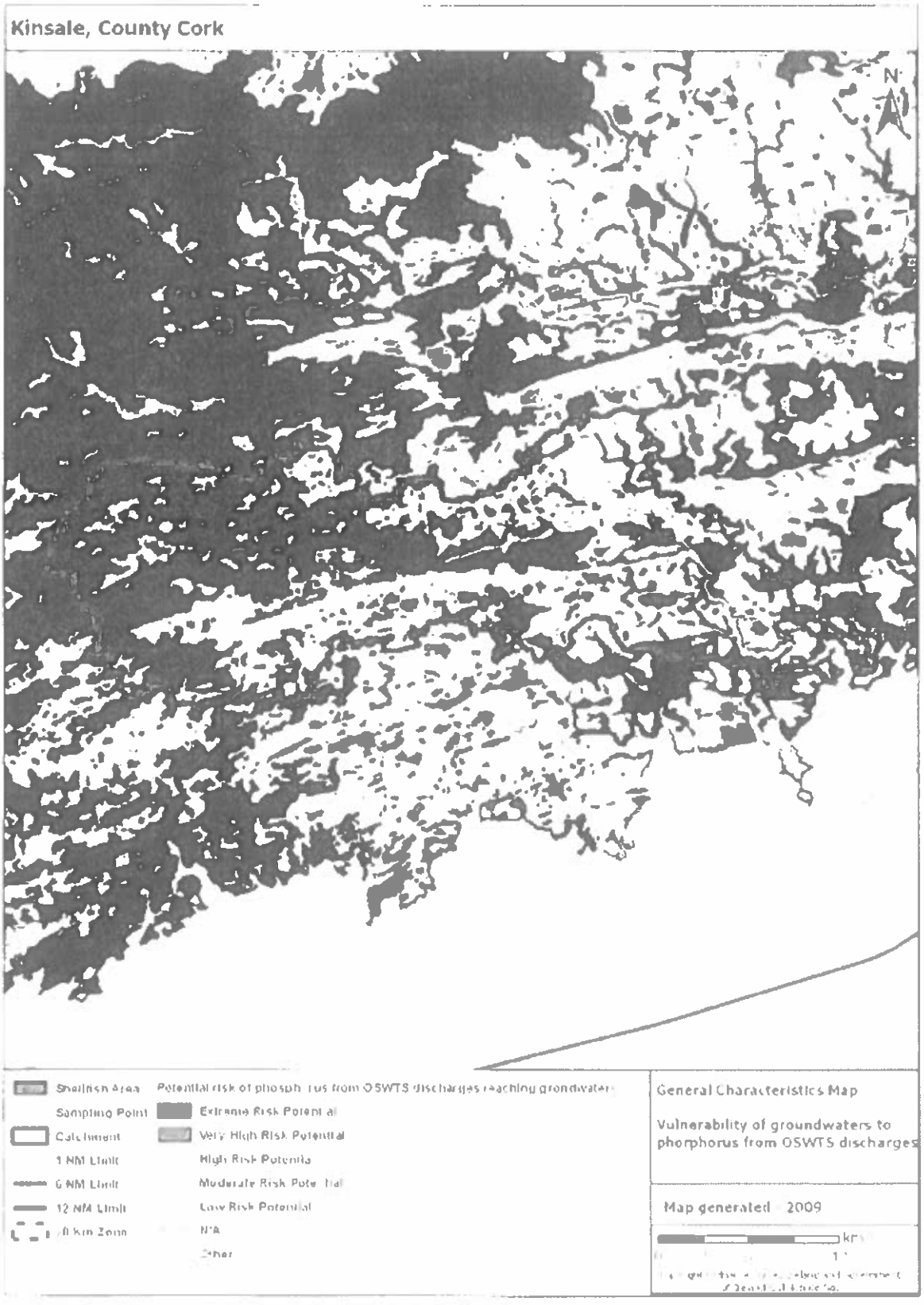
MAP 5 – Soil wetness



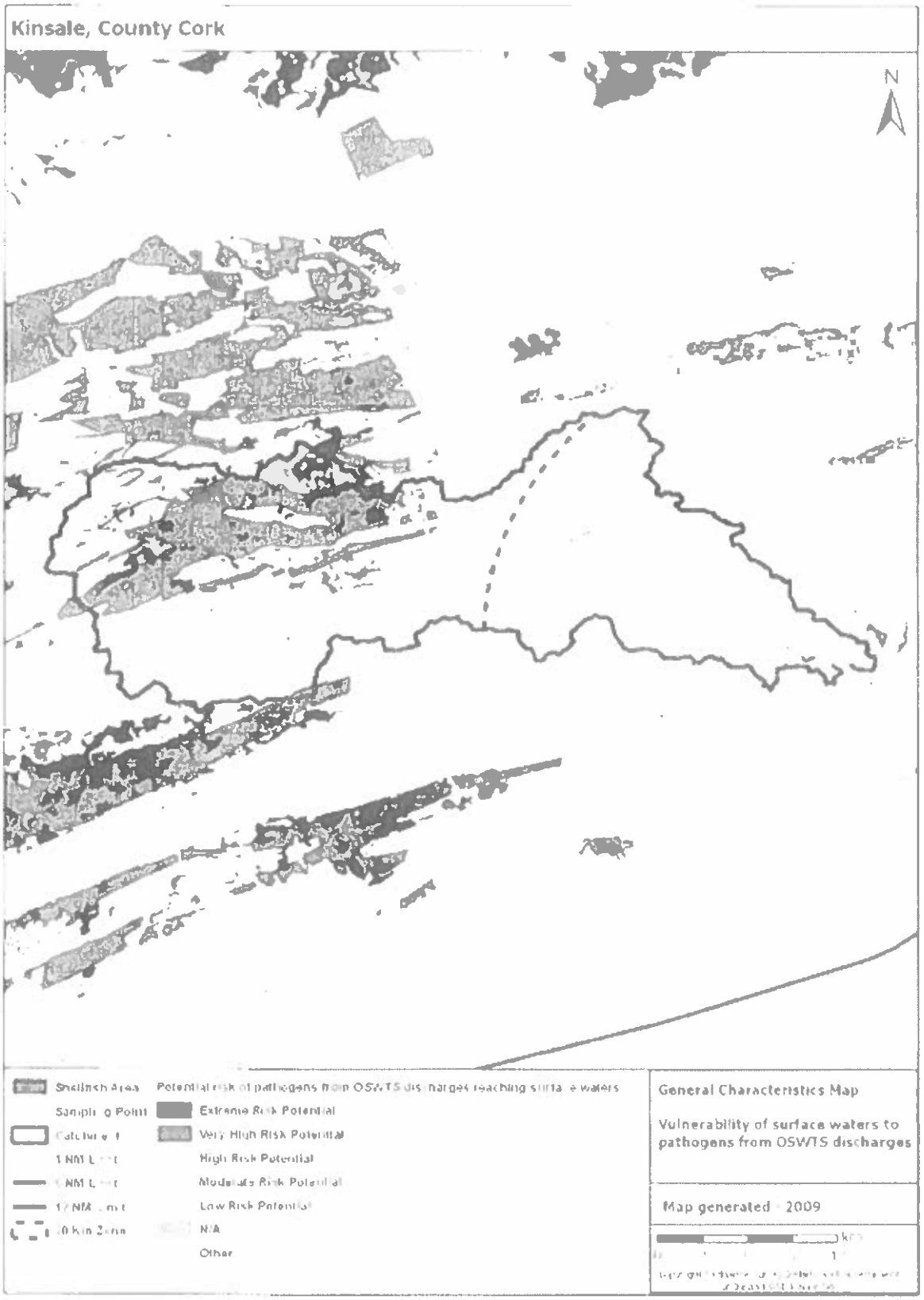
MAP 6 Vulnerability of groundwater to pathogens from subsoil discharges



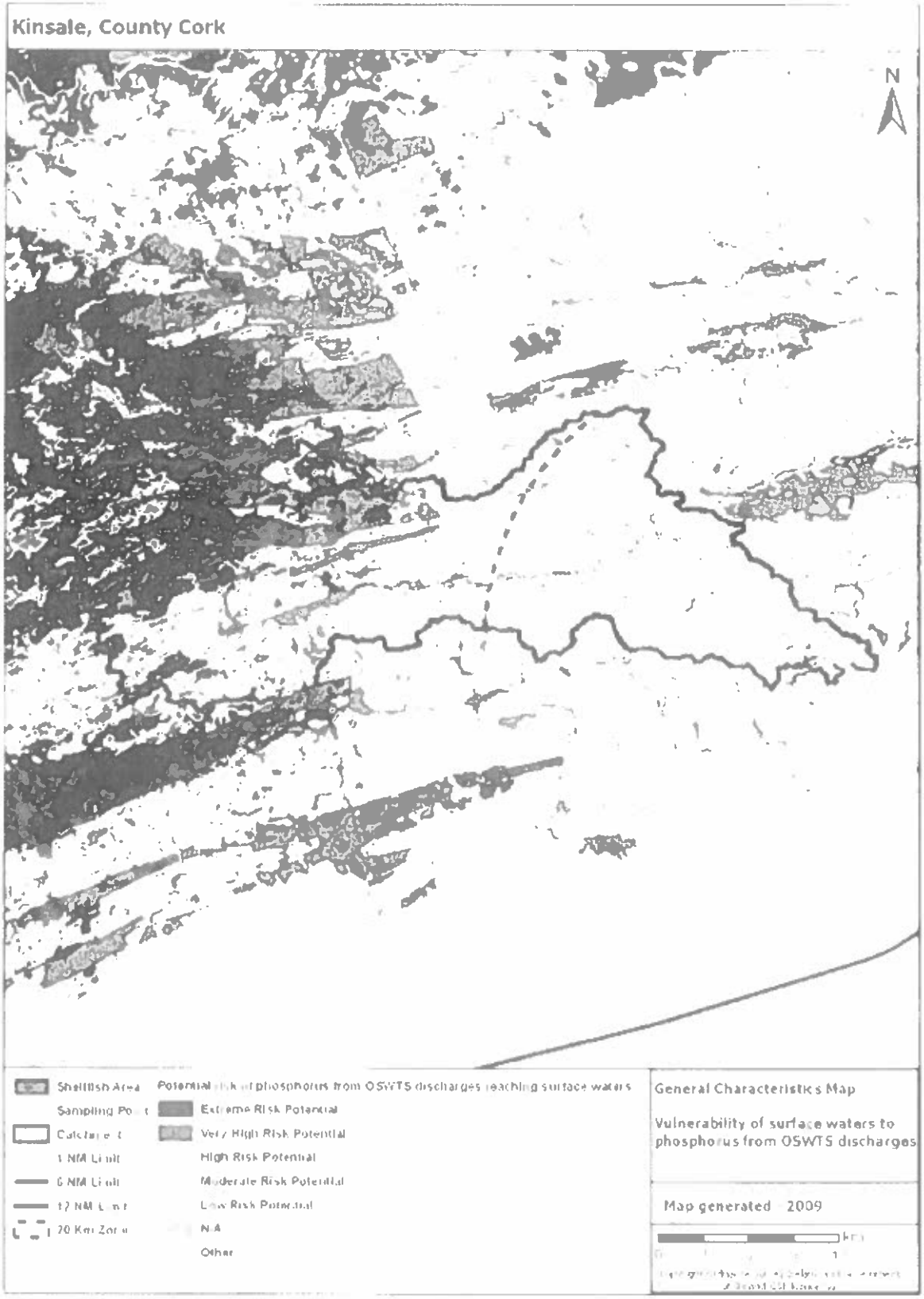
MAP 7 - Vulnerability of groundwater to phosphorus from subsoil discharges



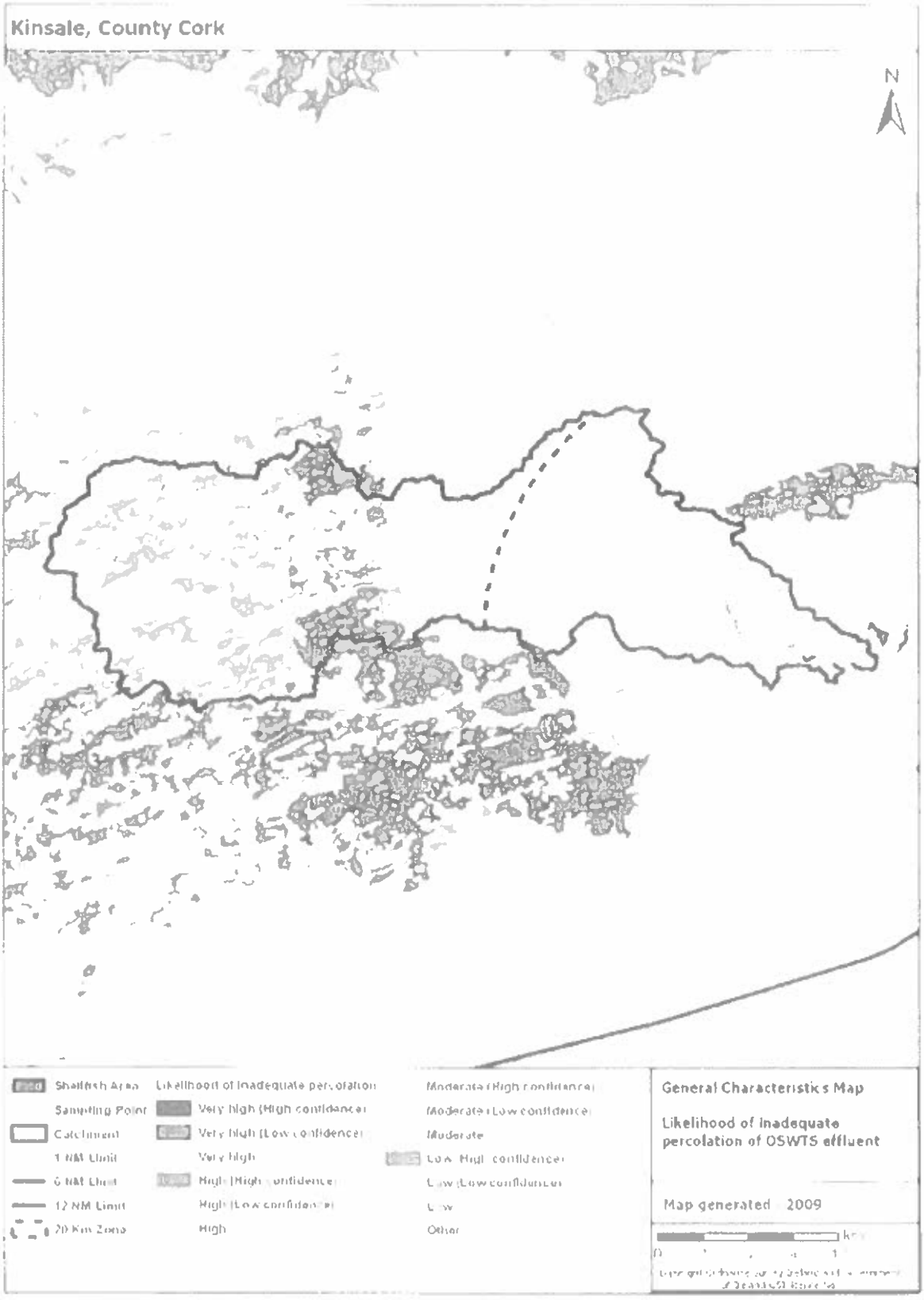
MAP 8 – Vulnerability of surface waters to pathogens from subsoil discharges



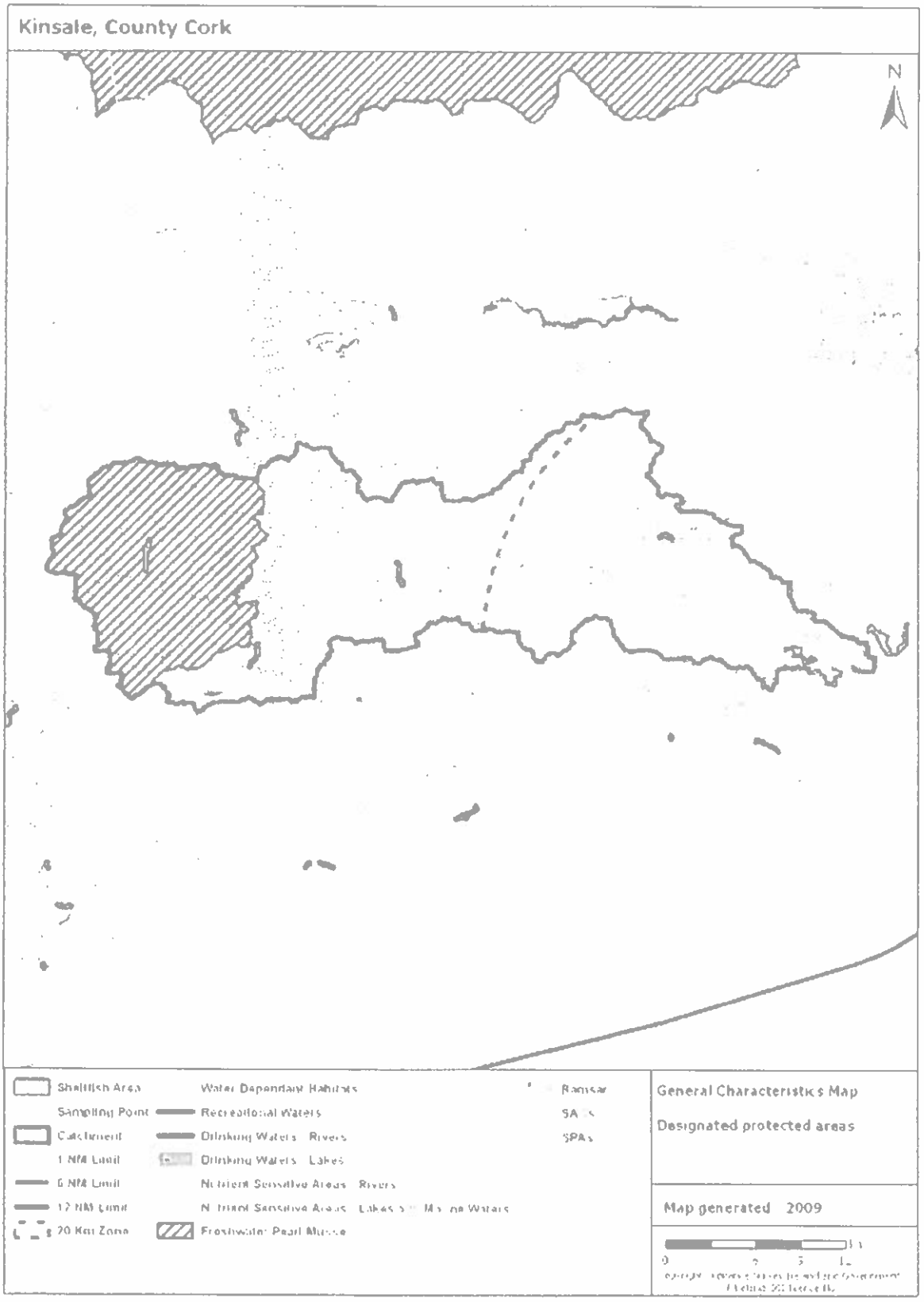
MAP 9 - Vulnerability of surface waters to phosphorus from subsoil discharges



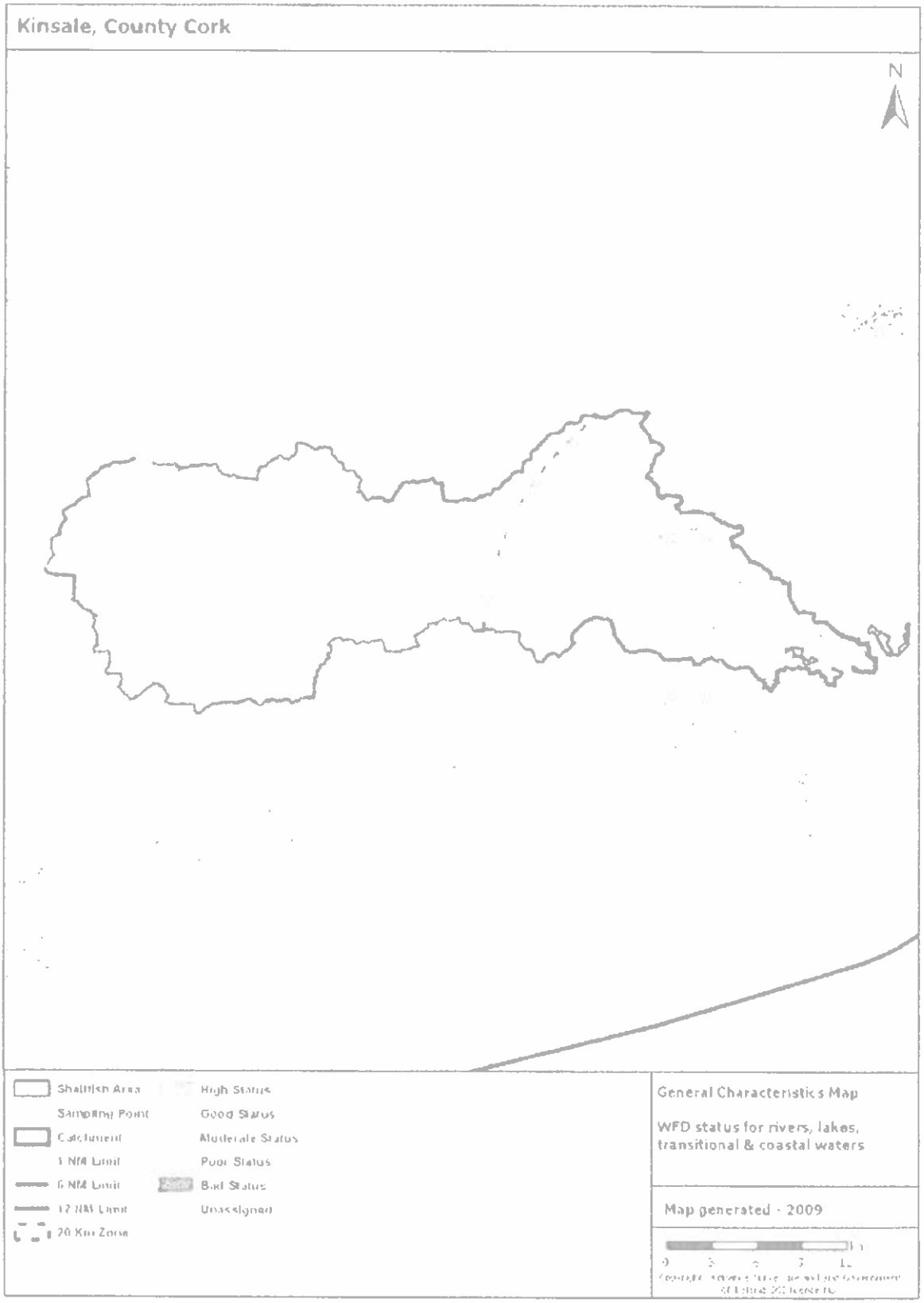
MAP 10 – Likelihood of inadequate percolation in sub-soils



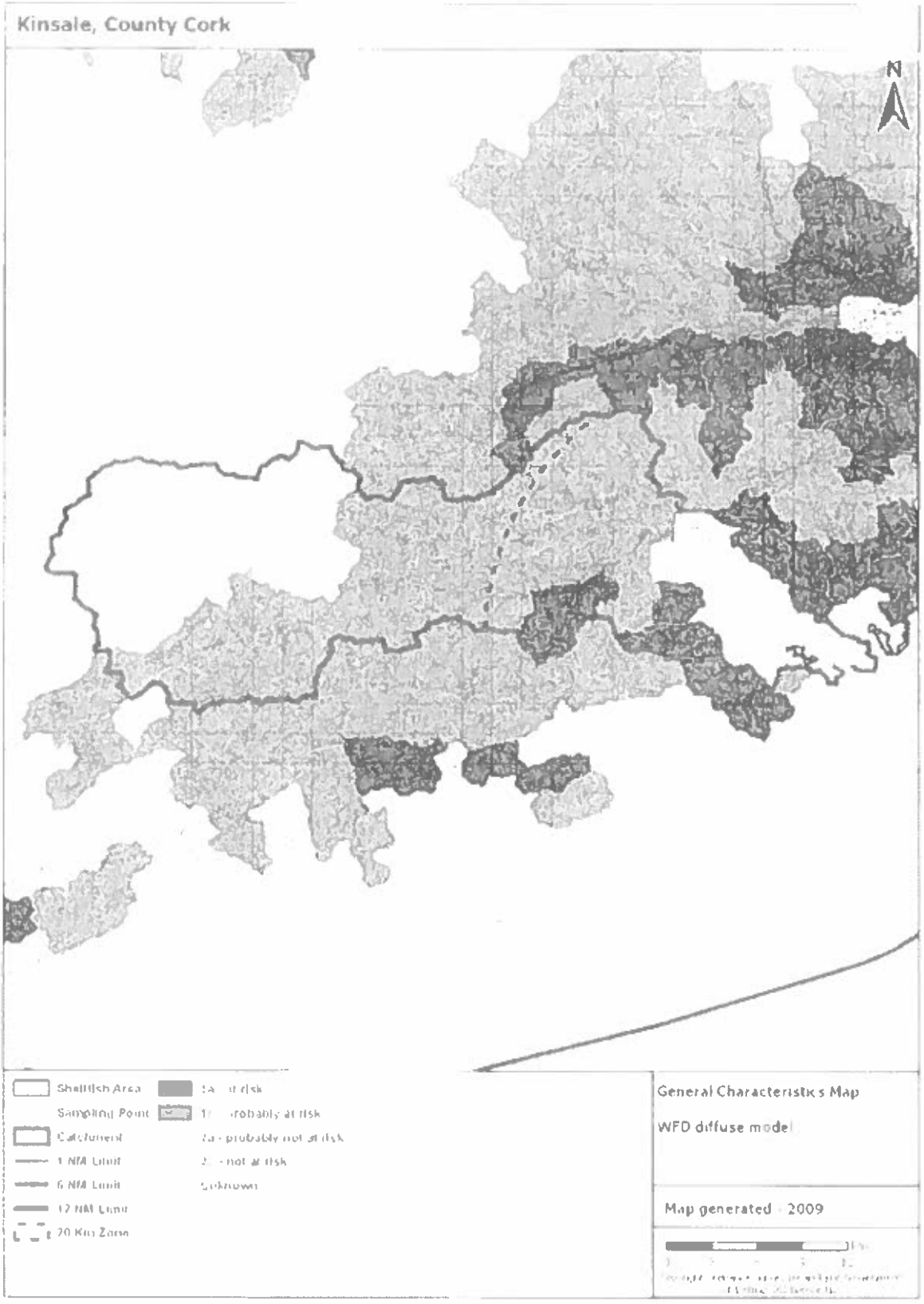
MAP 11 - Designated protected areas



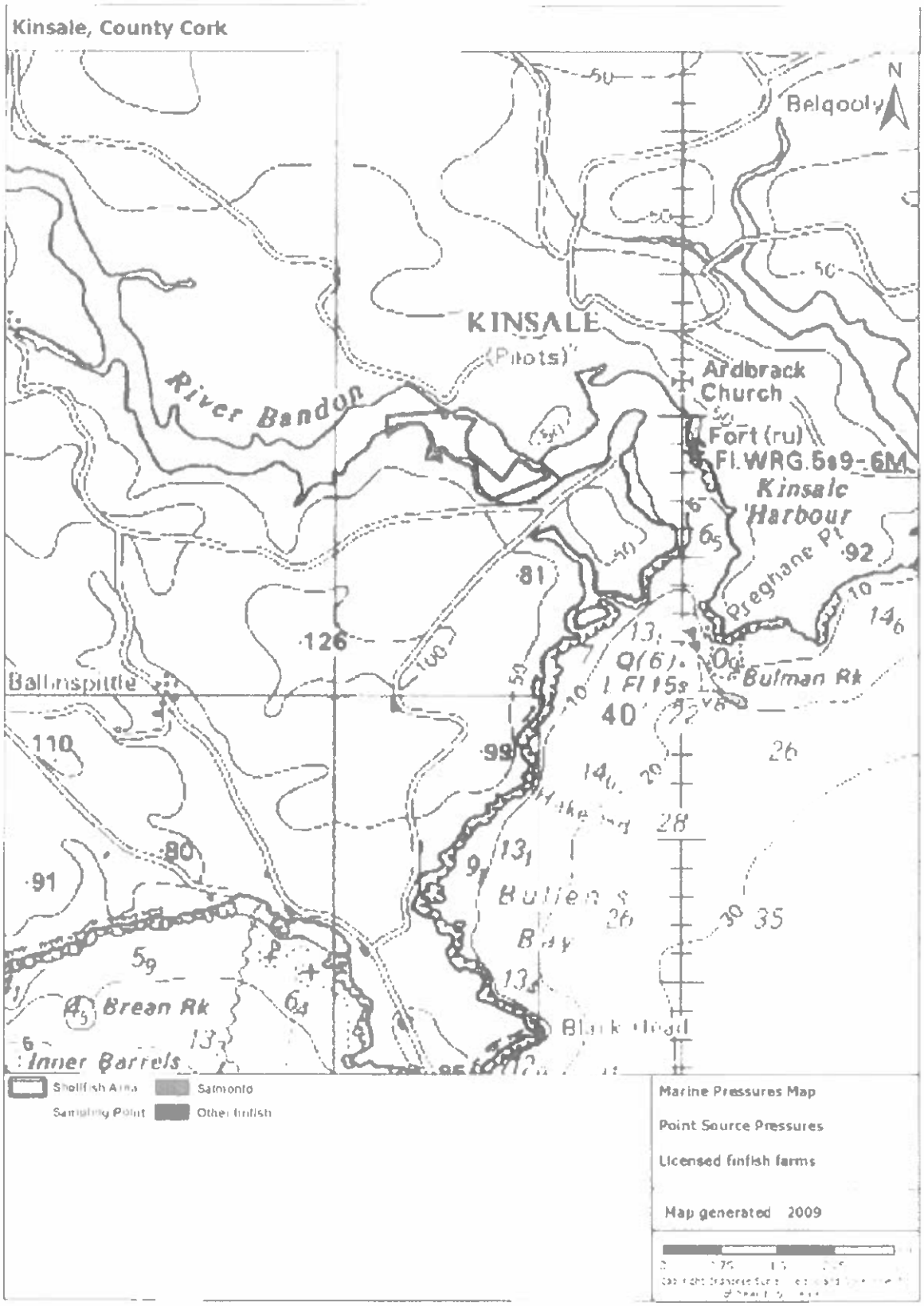
MAP 12 - WFD surface water status



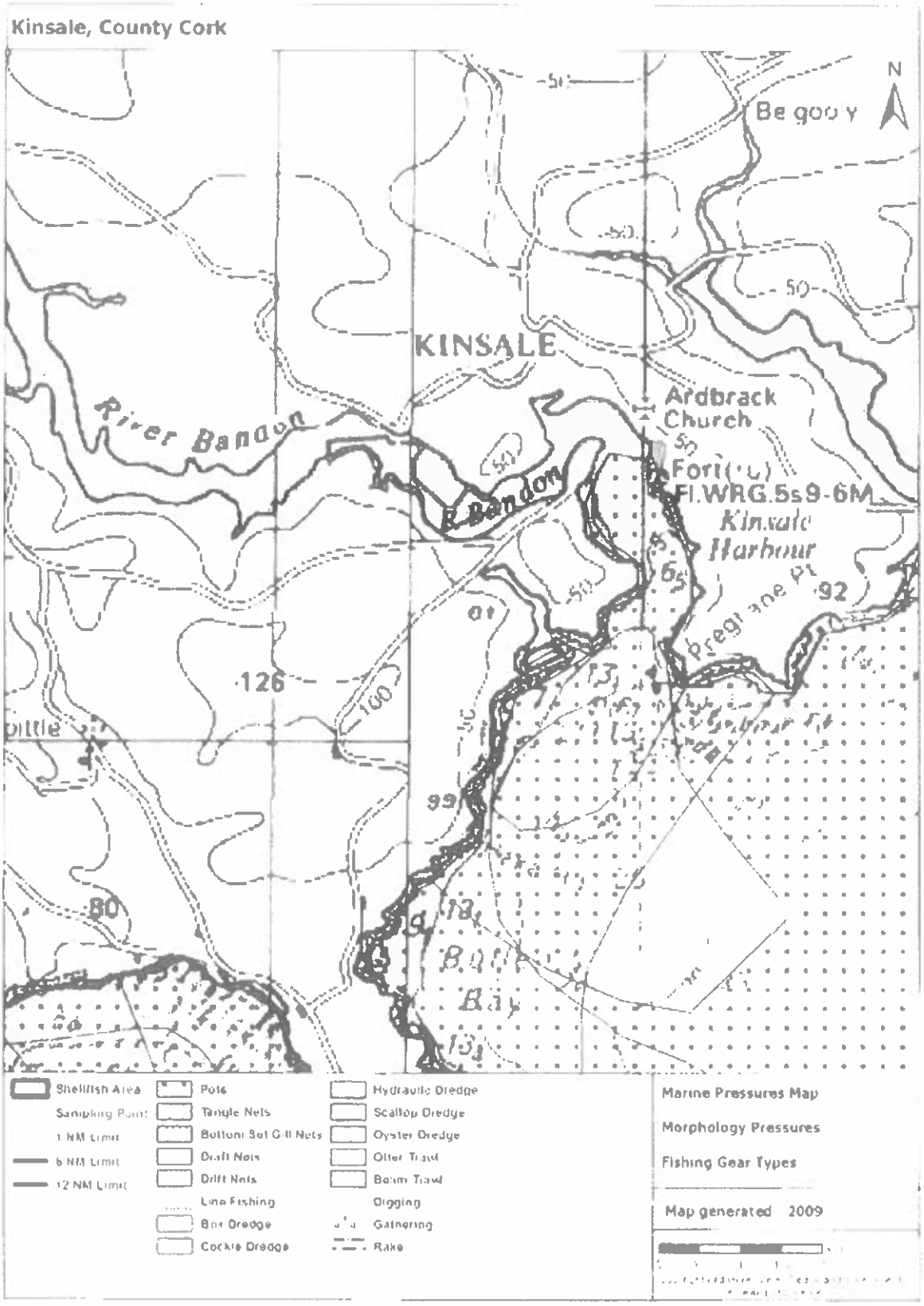
MAP 13 - Diffuse risk assessment



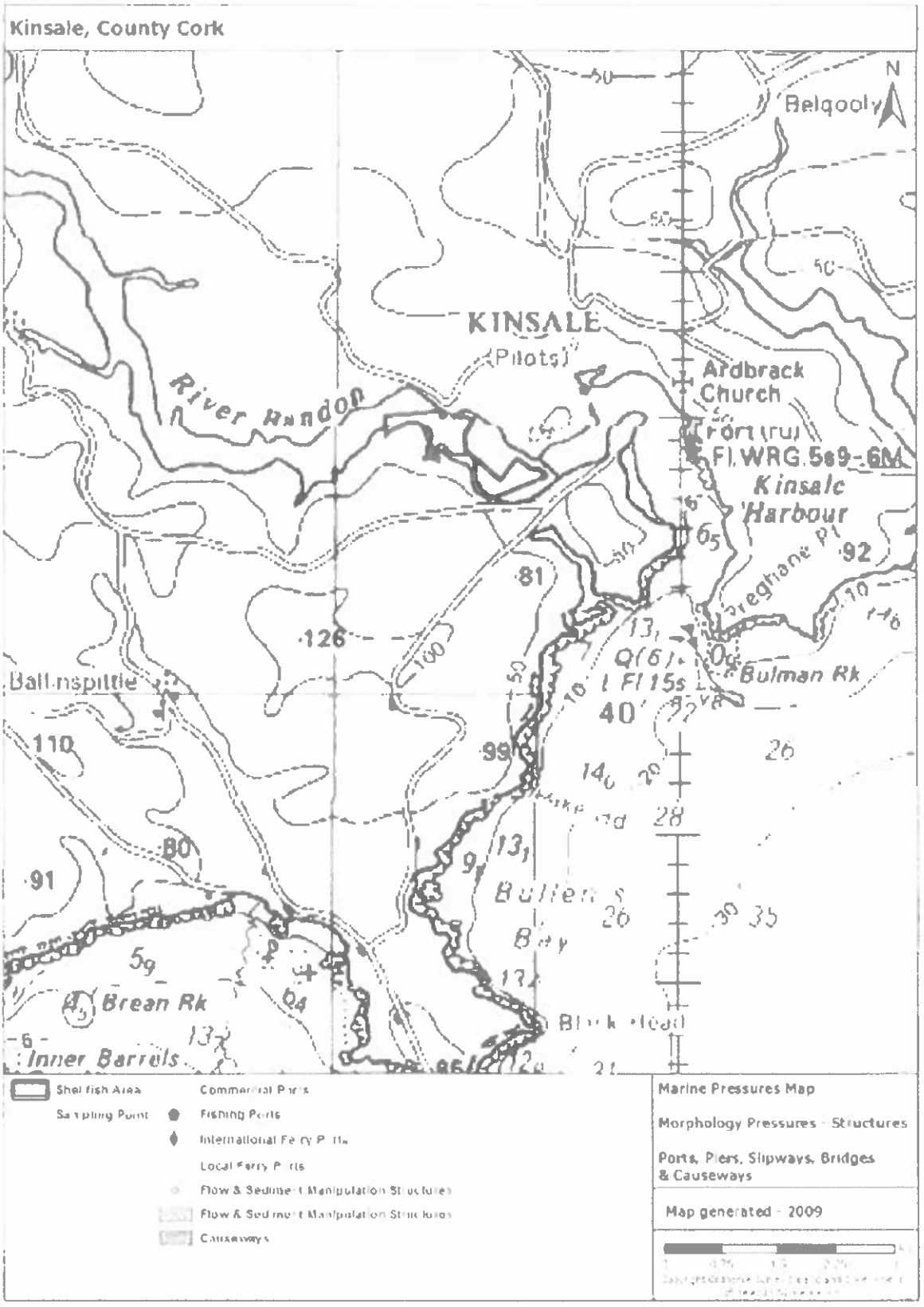
MAP 14 Licensed finfish areas (None in the vicinity of this shellfish area)



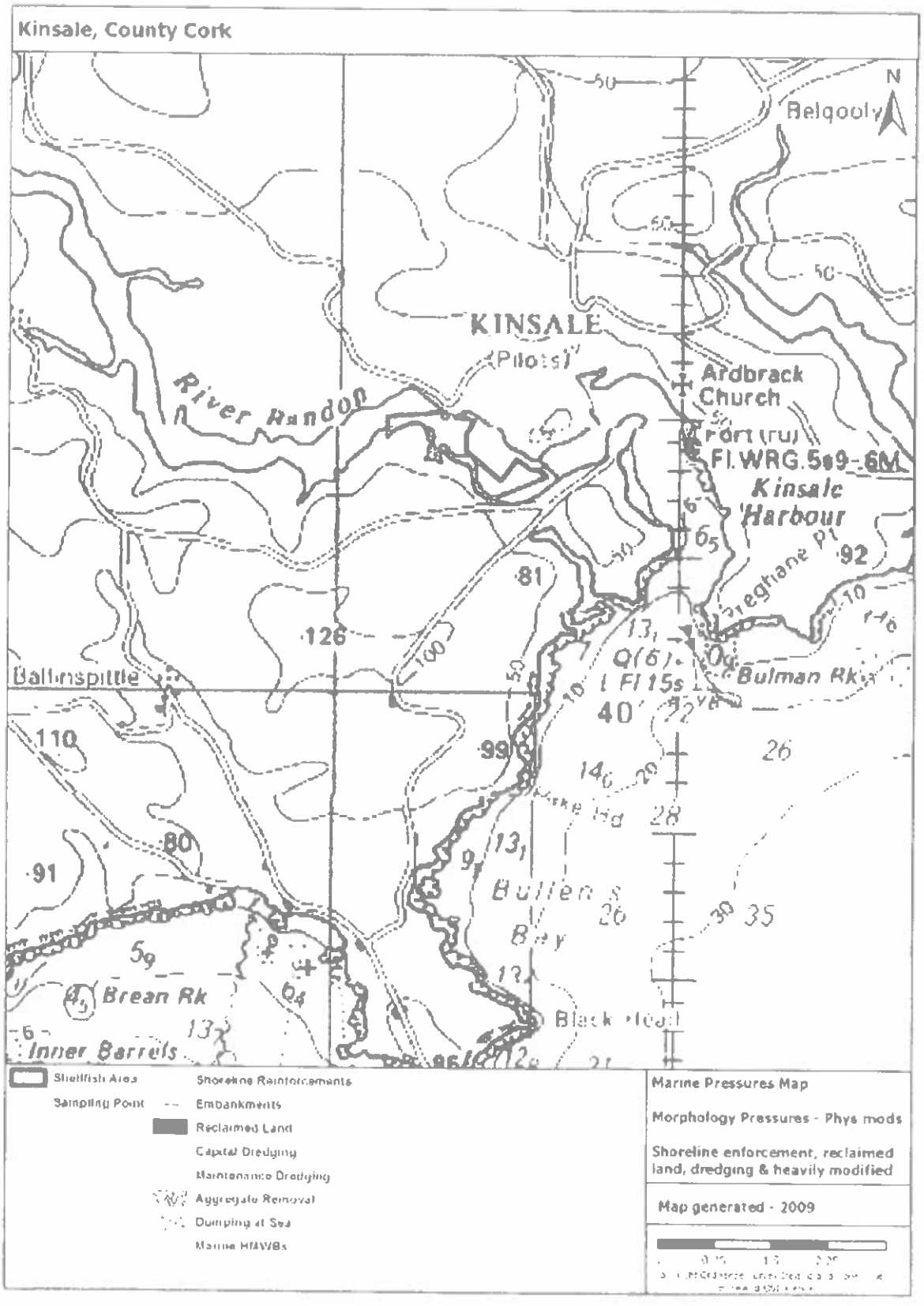
MAP 15 – Fishing gear activity



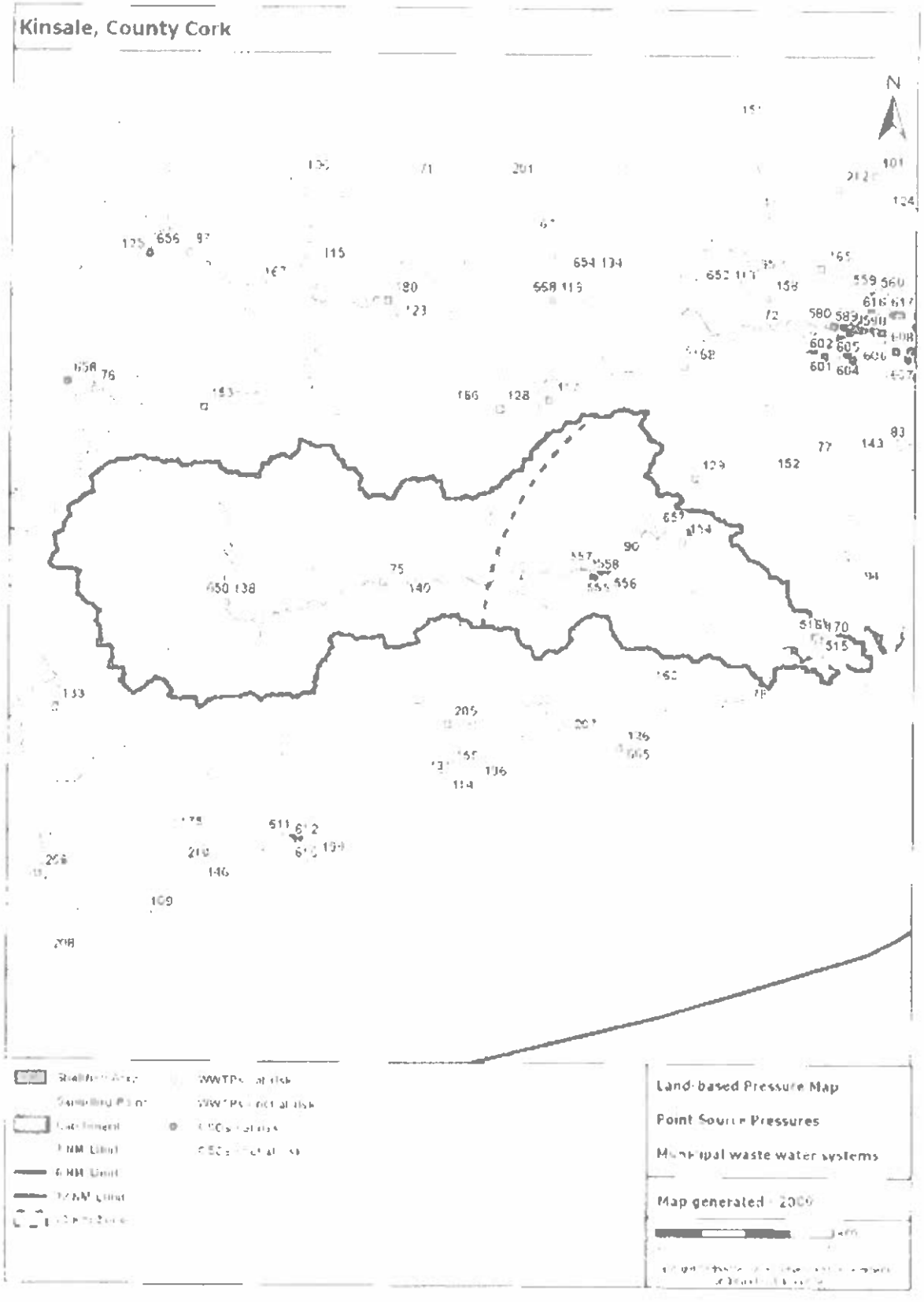
MAP 16 - Marine structures



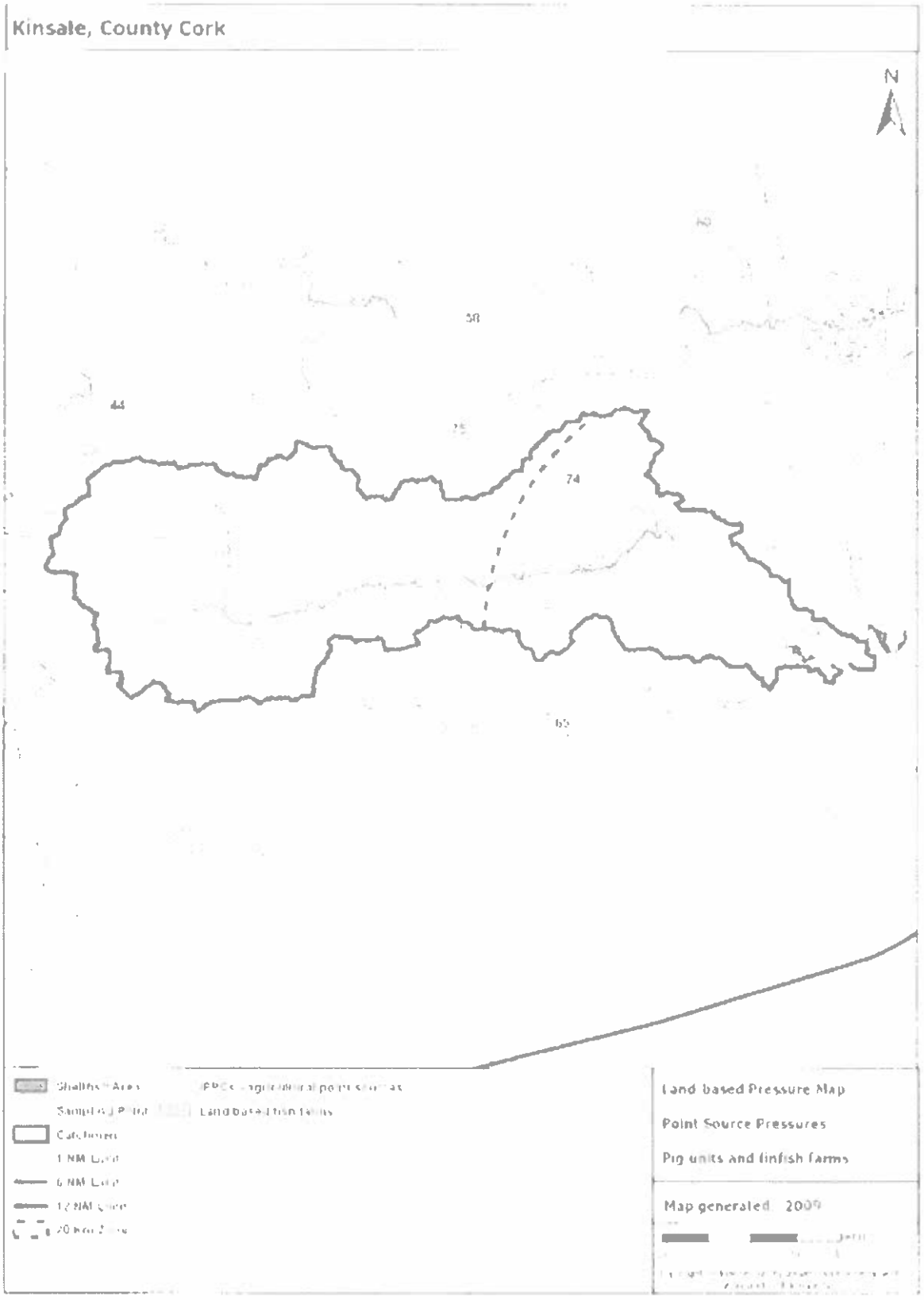
MAP 17 - Marine physical modifications (None in the vicinity of this shellfish area)



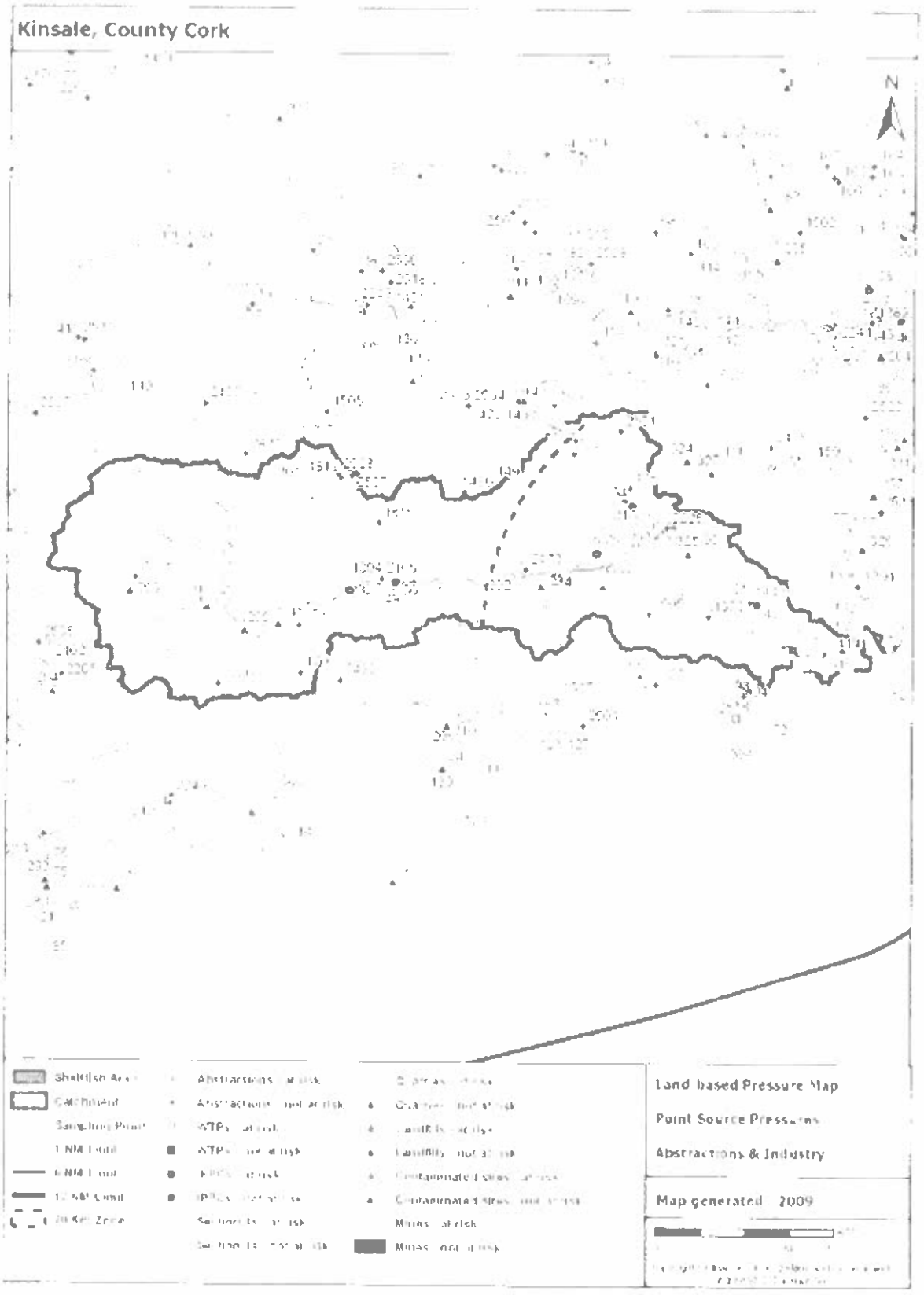
MAP 18 Municipal waste water systems



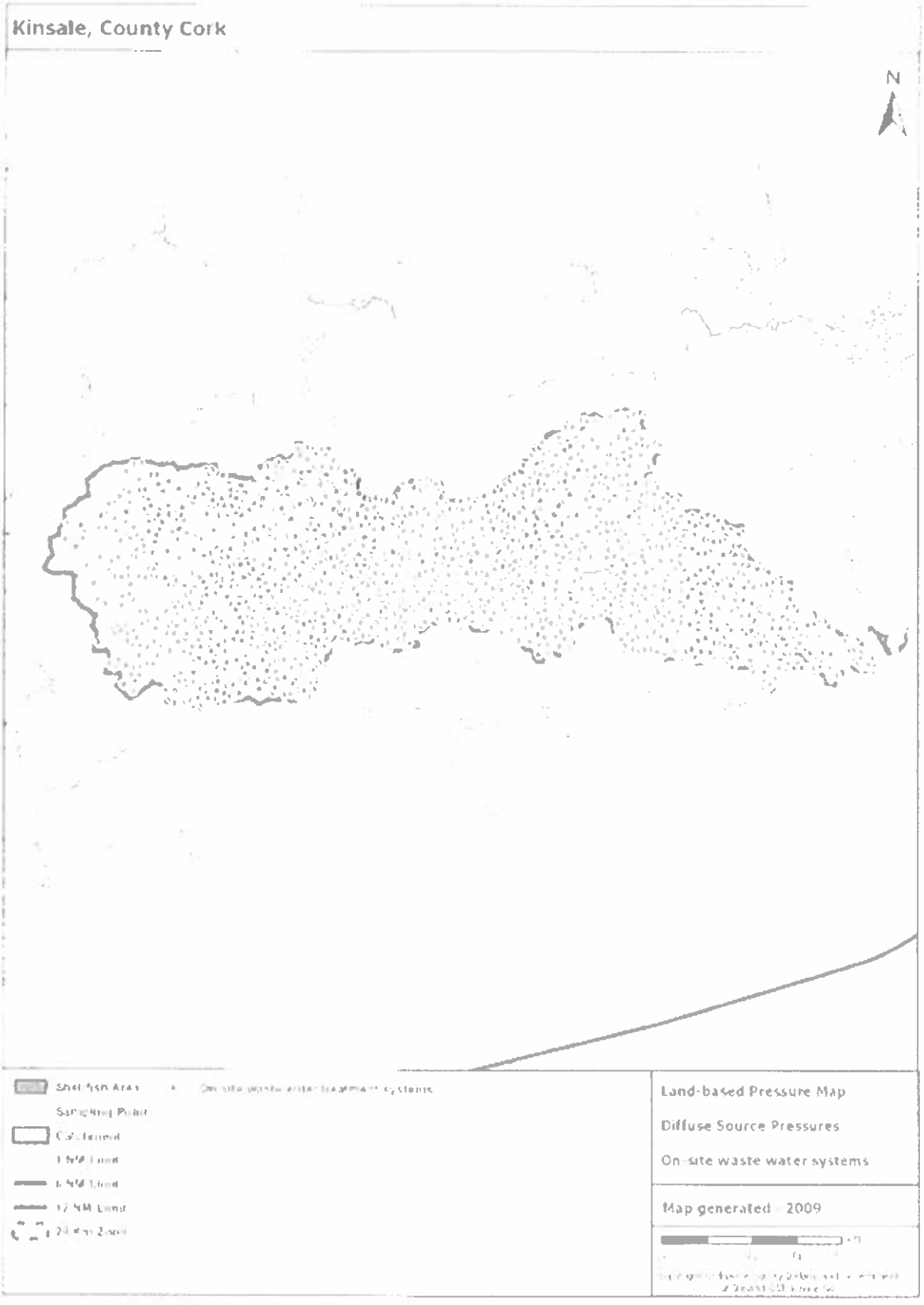
MAP 19 Pig units and finfish farms



MAP 20 - Industrial point source pressures

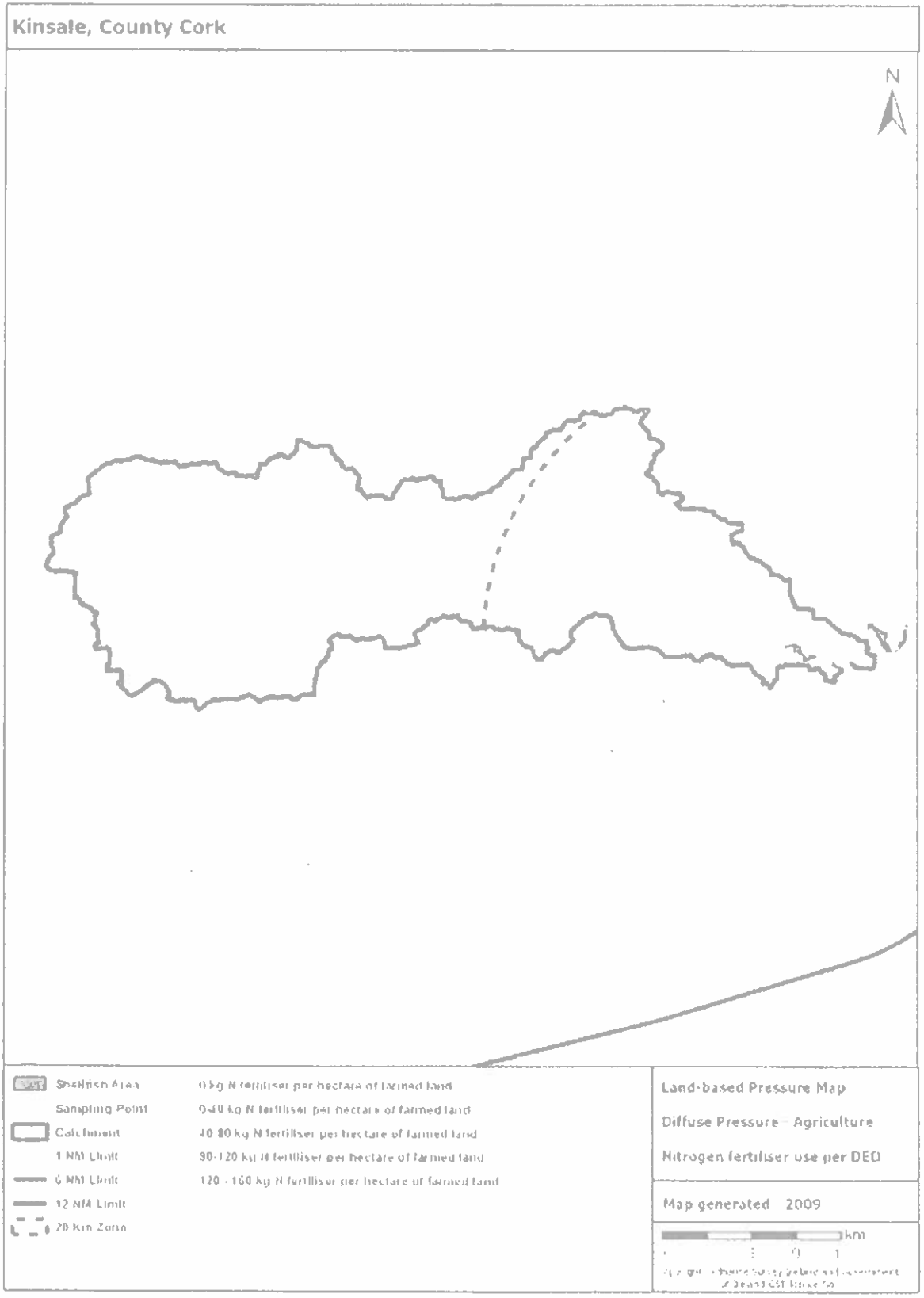


MAP 21 - On-site Waste Water systems



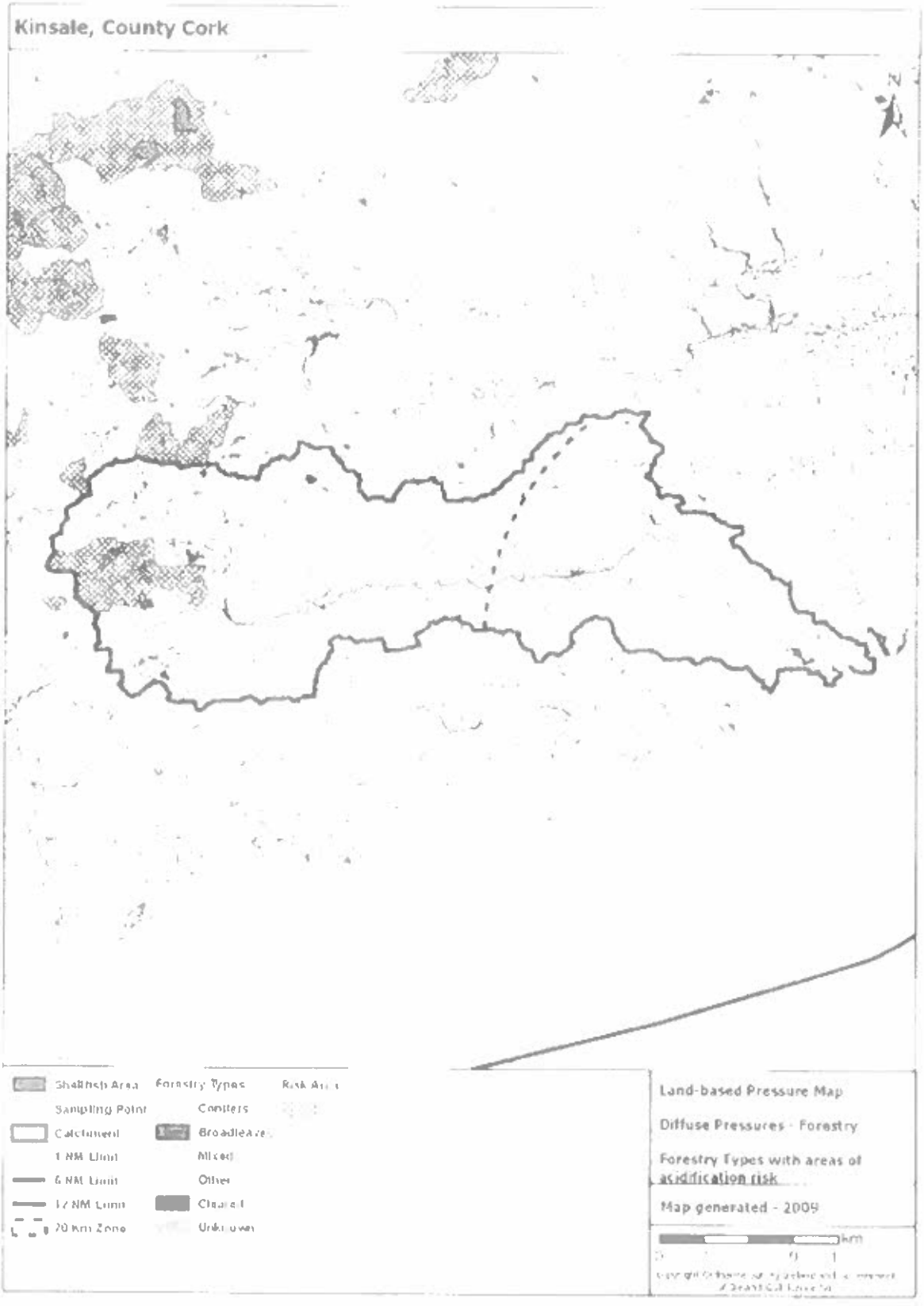
MAP 22 - Dairy and drystock livestock units

MAP 23 - Nitrogen fertiliser usage

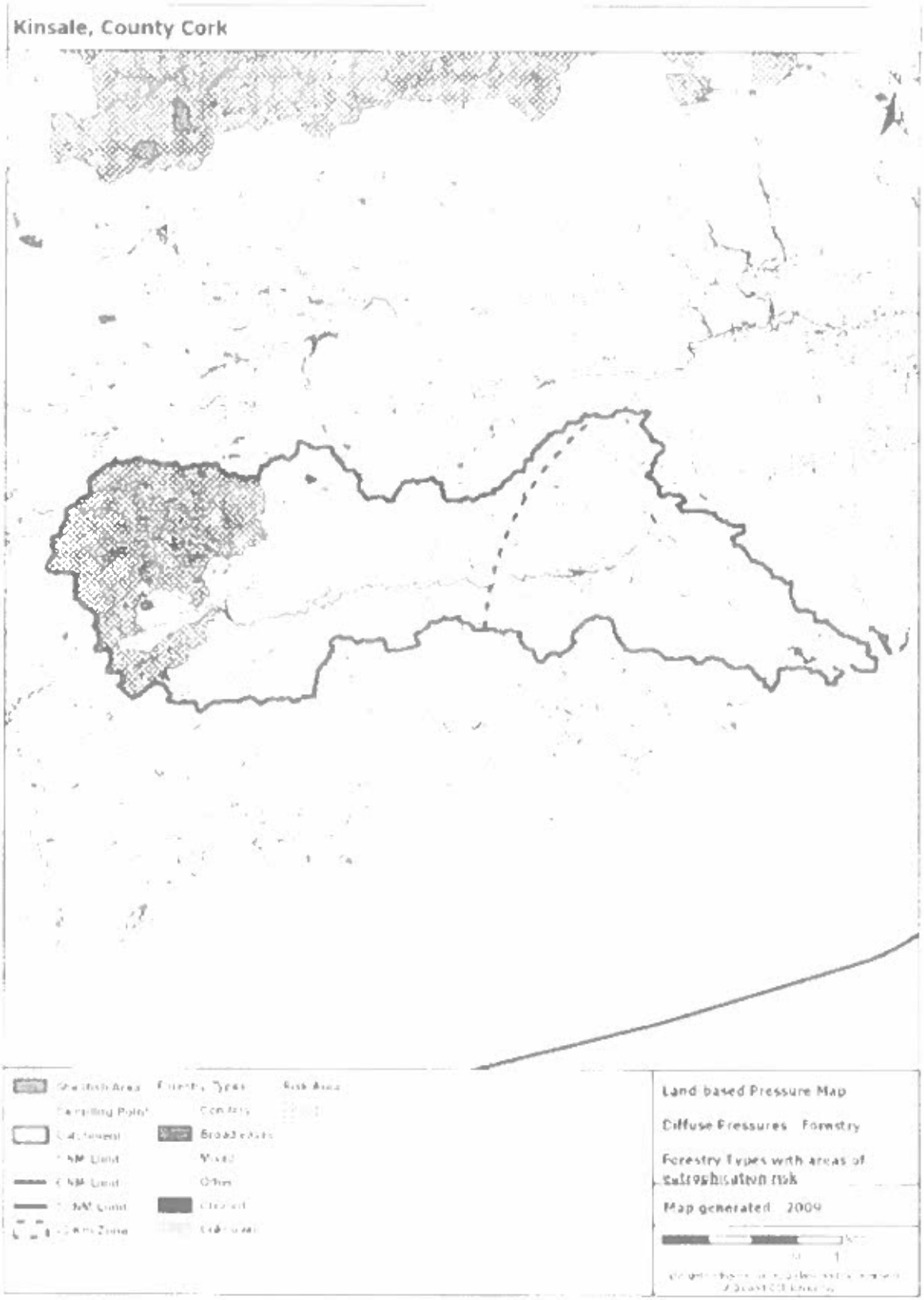


MAP 24 - Phosphorus fertiliser usage

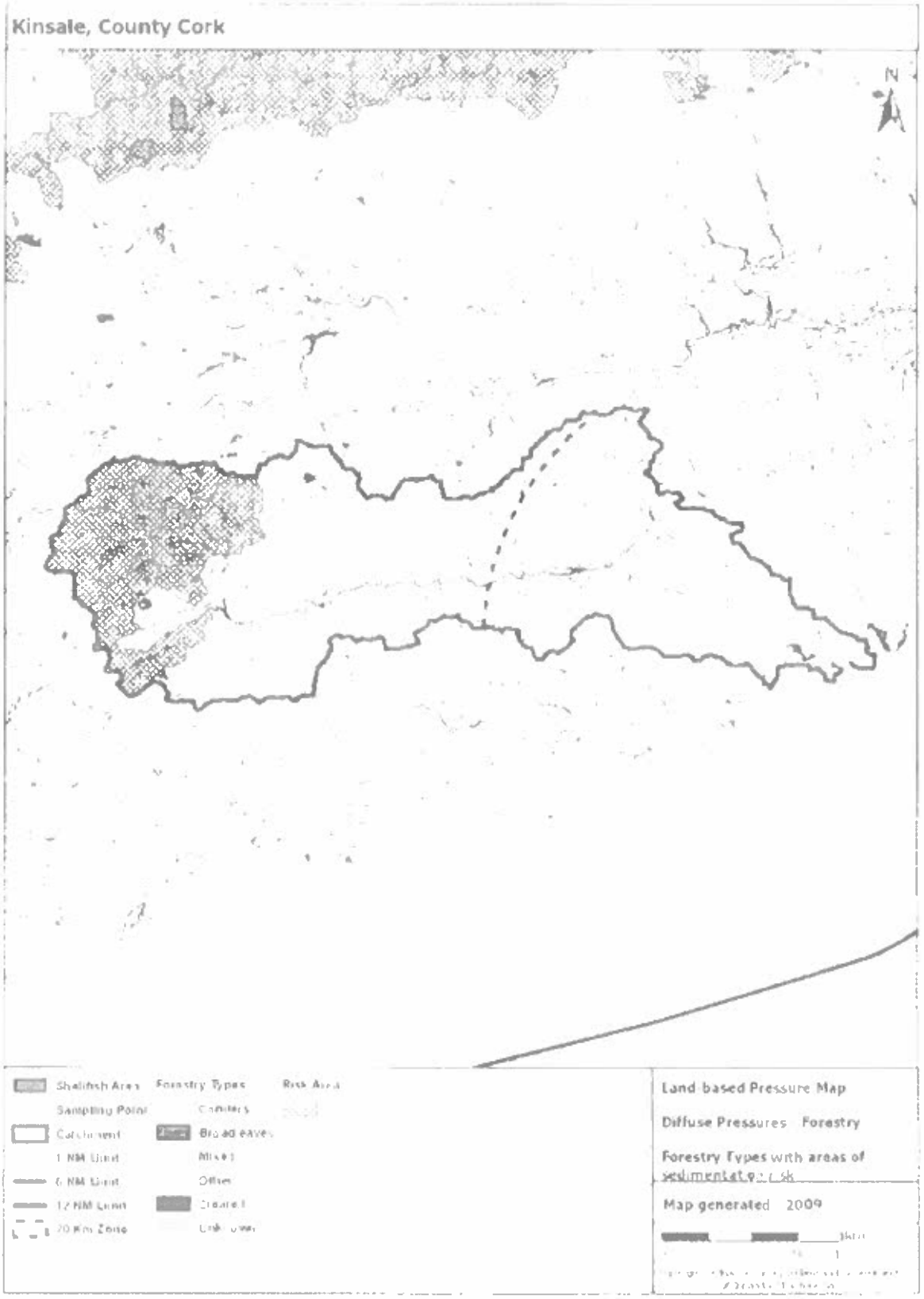
MAP 25 - Forestry types with acidification risk areas



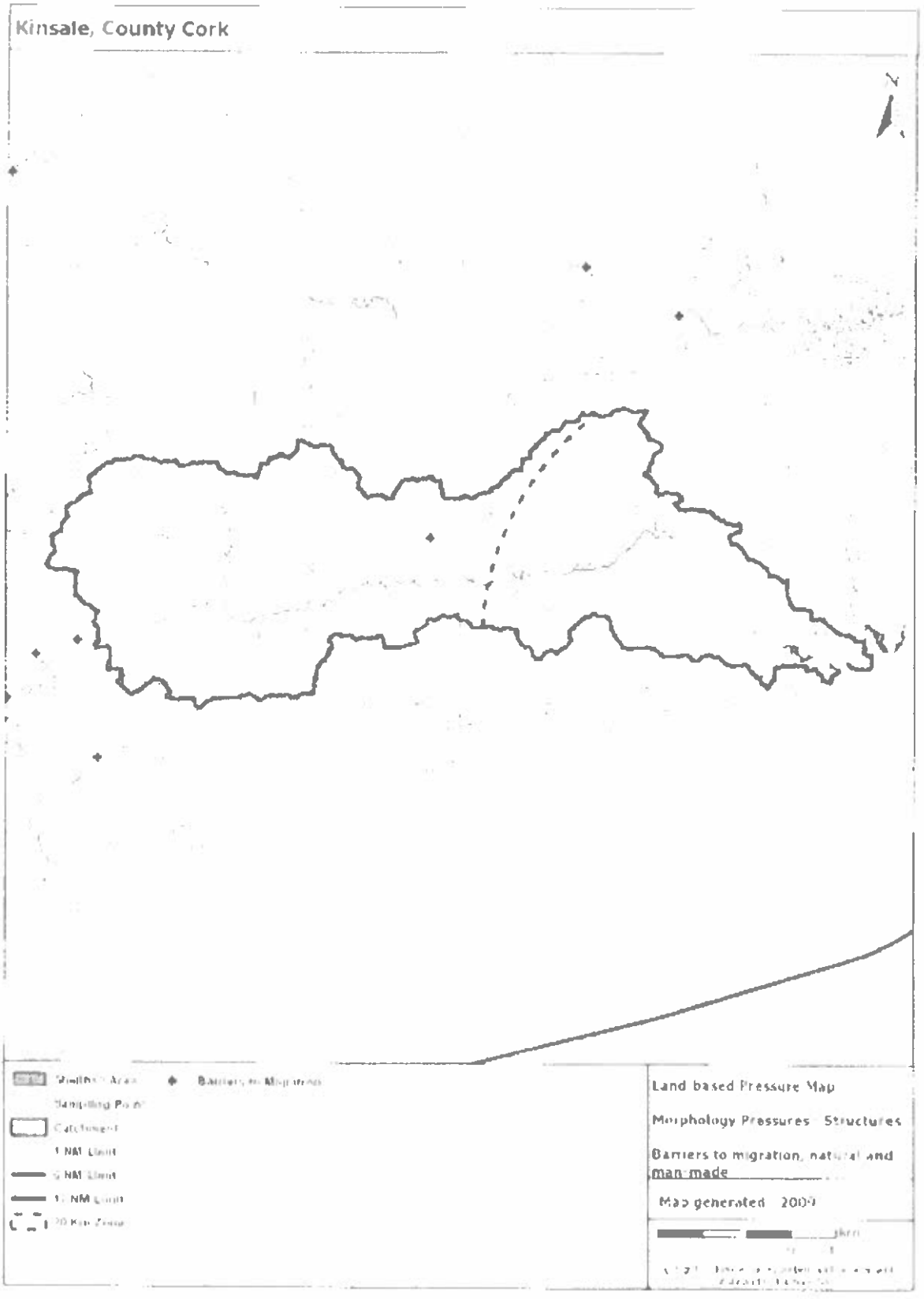
MAP 26 - Forestry types with eutrophication risk areas



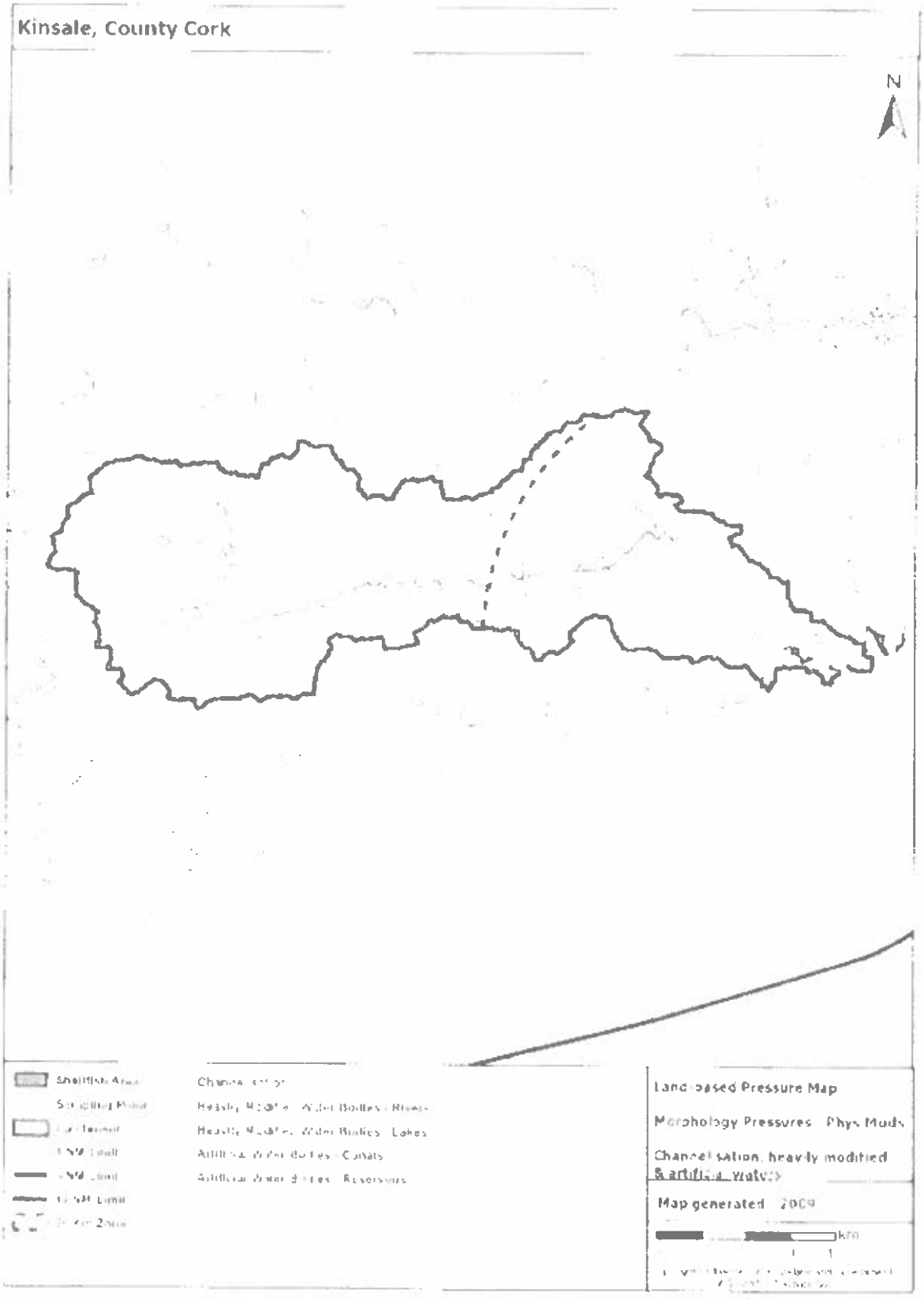
MAP 27 - Forestry types with sedimentation risk areas



MAP 28 – Freshwater structures (None within the 20 km zone of this catchment)



MAP 29 – Freshwater physical modifications (None within the 20 km zone)



5.0 PRESSURES

This section of the characterisation report provides a tabular overview and inventory of the marine and land-based pressures in the vicinity of the designated shellfish area and within the contributing catchment up to a distance of 20 kilometres from the shellfish area. The pressure data has been derived from existing inventories. The pressures considered most likely to be related to any measured impacts on shellfish water quality parameters in this shellfish area have been estimated in order to focus management efforts towards the protection and improvement of the water quality in this shellfish area

The available information considered when determining the likelihood of the pressures to cause impacts includes:

- pressure type

The pressure types, be it marine or land-based, point, diffuse or morphological, vary in terms of: their likelihood to impact on shellfish water quality; the water quality parameters they are likely to affect; and the severity of the impacts. The results of monitoring can therefore provide an indication of which pressure types are likely to be causing impacts.

- pressure magnitude

The magnitude of the pressures acting on a shellfish area can affect the overall potential impact. For marine pressures, the magnitude depends on the number and scale of the pressures but also on the exposure of the shellfish area to the pressures which in turn depends on how open or sheltered the shellfish area is and on water circulation. For land-based pressures, the magnitude depends on the number and scale of the pressures but also on the remoteness of the pressures from the shellfish areas which in turn depends on the distance of the pressures from the shellfish area, the topography of the catchment and the presence of lakes downstream of pressures which can act as pollution sinks.

- WFD risk designations

A series of risk assessments relating to the main pressures on waters were carried out during the WFD implementation process to identify pressures 'at risk' of impacting the surrounding water environment. These were originally carried out in 2004 and 2005 in accordance with Article V of the directive but many of them were subsequently updated in 2008 to feed into draft River Basin Management Plans. A lot of information about the pressures was collected to undertake these assessments and some of that information is summarised in this section where it is useful in screening which pressures are most likely to impact on shellfish water quality. In all cases, the most up-to-date risk assessment information available was used. Full details of the WFD risk assessments can be found at www.wfdire

Whilst the risk designations under the WFD provide a useful screening tool for pressures, their relevance in terms of any water quality issues measured in Shellfish Waters has to be assessed in further detail to identify key pressures at a particular site.

Table 4 lists all of the pressures considered in the development of the characterisation report and indicates their presence or absence within the shellfish area, within the marine waters in the vicinity of the shellfish area or within the contributing catchment. Those pressures that are present are discussed later in this section.

TABLE 4 - Summary of pressures

Pressure type	Pressure type	Pressures	Present
Marine	Point	Marine finfish farms	No
	Morphology	**Fishing gear activity**	**Yes**
		Structures and associated activities	
		Ports	**Yes**
		Flow/Sediment manipulation structures	**Yes**
		Piled structures	**Yes**
		Causeways	No
		Physical modifications	
		Shoreline reinforcement	**Yes**
		Embankments	No
		Reclaimed Land	**Yes**
		Capital dredging	No
		Maintenance dredging	No
		Aggregate removal	No
		Disposal at sea	**Yes**
		Marine heavily modified waters	No
Land-based	Point	Urban wastewater systems	
		Urban waste water treatment systems	**Yes**
		Combined sewer overflows	**Yes**
		Agricultural and aquacultural point sources	
		Pig units	**Yes**
		Freshwater finfish farms	No
		Industrial point sources	
		Abstractions	**Yes**
		Water treatment plants	**Yes**
		IPPCs	**Yes**
		Section 4s	**Yes**
		Quarries	**Yes**
		Landfills	**Yes**
		Mines	No
		Contaminated lands	**Yes**
		Other	No
	Diffuse	**On-site waste water treatment systems**	**Yes**
		Agriculture	
		Livestock density	**Yes**
		Nitrogen fertiliser usage	**Yes**
		Phosphorus fertiliser usage	**Yes**
		Forestry	**Yes**
	Morphology	Structures	
		Barriers to migration	No
		Physical Modifications	
		Channelisation	No
		Heavily modified waters	No
		Artificial waters	No

5.1 Marine Pressures

Marine pressures are considered up to a distance of 5 kilometres from the shellfish area. Marine pressures situated further away or in adjacent waterbodies are also mentioned if they are considered significant. Marine pressure types include point source pressures (marine finfish farms) and morphological pressures including fishing gear activity, structures (ports, bridges, piers, slipways etc) and physical modifications (shoreline reinforcement, embankments, dredging etc). The potential impacts associated with these pressures are as follows:

- Point source pressures

Marine finfish farms can be associated with increased nutrient levels in waters, arising from fish excretion and excess feed input.

- Morphological pressures

Fishing activity can be associated with increased suspended sediment levels arising from disturbance of the seabed. The potential severity of the impacts varies depending on the type of fishing gear used and the extent, frequency and duration of the activity. The impact of boats is dealt with in association with marine structures below.

Structures (such as ports, harbours, bridges, slipways and piers) alter natural processes such as flow and silt movement and can therefore affect levels of suspended sediment in marine waters. The activities associated with these structures, for example shipping and boating, are associated with effects on the levels of general physico-chemical parameters, faecal coliforms, metals and chemicals.

Physical modifications (such as shoreline reinforcement, embankments and dredging) can alter natural processes such as flow and silt movement and can therefore affect levels of suspended sediment. However, once these modifications are established or the activities have ceased, the surrounding environment can acclimatise and impacts do not necessarily continue.

The following tables summarise the nature and extent of marine pressures up to a distance of 5 kilometres from the designated shellfish area. The likelihood for these pressures to impact on shellfish water quality parameters is discussed. The potential severity of the impacts of marine pressures is most closely associated with the activity type, magnitude and proximity and therefore the discussions in this section focus on these factors.

5.1.1 Point source pressures

There are no marine point source pressures in the vicinity of this designated shellfish area.

5.1.2 Morphology pressures

An assessment of the risk posed to marine waters from marine morphology pressures was carried out during the WFD implementation process. The results of this assessment show that the marine waters in and around this shellfish area are considered to be 'at risk' from morphological pressures.

Fishing gear activity

TABLE 5 - Fishing gears

Fishing gear types	Type	Present	Comment
Pots	Static	Yes	Downstream of the area
Tangle Nets	Static	No	NA
Bottom Set Gill Nets	Static	No	NA
Draft Nets	Static	No	NA
Drift Nets	Static	No	NA
Line Fishing	Static	Yes	Widespread throughout the area
Box Dredge	Mobile	No	NA
Cockle Dredge	Mobile	No	NA
Hydraulic Dredge	Mobile	No	NA
Scallop Dredge	Mobile	No	NA
Oyster Dredge	Mobile	No	NA
Otter Trawl	Mobile	No	NA
Beam Trawl	Mobile	No	NA
Digging	NA	No	NA
Gathering	NA	No	NA
Rake	NA	No	NA

Table 5 provides a summary of the fishing gear activity occurring within 5 kilometres of the designated shellfish area. Map 15 illustrates these pressures. Boat movements are dealt with below in association with marine structures such as ports and piers.

Static fishing gear types generally would not be expected to impact on shellfish water quality. Mobile fishing gears however disturb the seabed and can therefore affect the levels of suspended sediments in marine waters with the severity of the impacts depending on the frequency, intensity and extent of the fishing activity.

Fishing gear activity in the area includes widespread line fishing (lines set on the seabed with baited hooks at intervals) and the use of pots (baited traps set on the seabed targeting crustaceans). Therefore, fishing activity is unlikely to affect shellfish water quality in this shellfish area.

Structures and associated activities

TABLE 6 - Marine morphology structures

Marine morphology structures	Direct	0-5km	Comment

Marine morphology structures	Direct	0-5km	Comment
Ports	0	1	Kinsale commercial and fishing port
Flow and sediment manipulation	0	10	Piers, berths
Piled structures	0	6	NA
Causeways	0	0	NA

Table 6 provides a summary of the marine morphology structures located within 5 kilometres of the designated shellfish area. Map 16 illustrates these pressures. Flow and sediment manipulation structures include piers, breakwaters, groynes, flow deflectors and training walls. Piled structures include bridge and pier supports and wind turbines. Causeways include roads and railway lines. These structures affect flow and sediment movement and can therefore impact on levels of suspended sediments, though these impacts can settle down once the structures are well established in an area. The activities associated with marine structures, including shipping and boating, can affect a wide range of water quality parameters including general physico-chemical parameters such as suspended sediment, dissolved oxygen and nutrient levels. Faecal coliform levels can also be affected as well as the levels of harmful substances such as metals and pesticides. Boat movements can lead to erosion and sedimentation effects as well as pollution from fuels.

Kinsale port is situated approximately half a kilometre downstream of the shellfish area and there are also 10 flow and sediment manipulation structures and 6 piled structures located within 5 kilometres of the shellfish area. Monitoring in the area does not indicate any water quality issues which are likely to arise from the structures themselves but the activities associated with the structures are a possible source of the faecal contamination indicated by shellfish flesh monitoring and the issues with nutrient, DO and BOD levels indicated by WFD monitoring. Therefore, these activities could possibly be affecting shellfish water quality in this shellfish area.

Physical modifications

TABLE 7 - Physical modifications

Physical modifications	Direct	0-5 km	Comment
Shoreline reinforcement	0	5	Sea walls
Embankments	0	0	NA
Reclaimed land	1	0	Lower Bandon Estuary
Capital dredging	0	0	NA
Maintenance dredging	0	0	NA
Aggregate removal	0	0	NA
Dumping at sea	0	1	Between Kinsale Harbour & Oysterhaven

Table 7 provides a summary of the physical modifications occurring within 5 kilometres of the designated shellfish area. Map 17 illustrates these pressures. These modifications can affect flow and sediment movement though these impacts can cease once the modifications are established.

There is one area of reclaimed land directly adjacent to the shellfish area as well as 5 sea walls and one marine dumping area within 5 kilometres of the shellfish area. Monitoring in the area does not indicate any water quality issues which are likely to

arise from these modifications so it is unlikely that they are affecting shellfish water quality in this shellfish area

5.2 Land-based Pressures

The contributing catchment is used to identify the land-based pressures that could potentially be impacting on shellfish water quality and therefore the size of the contributing catchment can be important in determining the magnitude of the pressures. Contributing catchment sizes vary considerably; however, pressures are only considered up to a distance of 20 kilometres from the shellfish area and are, where appropriate, divided into four zones: direct, 0 to 5 kilometres, 5 to 10 kilometres and 10 to 20 kilometres. Pressures within the catchment, but further than 20 kilometres from the shellfish area, are also included if they are considered significant. In addition significant land-based pressures acting in adjacent waterbodies which may have an impact due to tidal influences are also considered where relevant.

Land-based pressure types include point source pressures, diffuse source pressures and morphology pressures. The shellfish water quality parameters potentially impacted by these pressures are as follows:

- Point source pressures can affect the whole suite of shellfish water quality parameters. For example, waste water treatment plants, CSOs and agricultural point sources can impact on the levels of faecal coliforms, nutrients, bacteria and other harmful substances in receiving waters while IPPC licensed industries, mines, quarries and landfills can impact on the levels of polluting substances in receiving waters such as petroleum hydrocarbons, organohalogenated substances and metals. Abstractions are included under this heading and can impact on salinity levels, though not to an extent likely to lead to non-compliances with shellfish water salinity standards, as well as reducing the dilution available for polluting discharges.

- Diffuse source pressures affect many of the shellfish water quality parameters. Agricultural activity and on site waste water treatment systems (OSWTS) can impact on faecal coliform levels as well as general physico-chemical parameters such as the levels of suspended sediments and dissolved oxygen. Forestry activity can impact on the pH of receiving waters as well as on the levels of suspended solids and nutrients and it is also associated with the use of pesticides which can contain organohalogenated substances.

- Land-based morphology pressures, and associated activities, are not generally associated with impacts on water quality in marine areas. Their impacts are usually associated with the loss of natural freshwater features and habitats and changes to the behaviour of freshwater systems including sediment movement. Channelisation activities however, if occurring close to shellfish areas, can impact on shellfish water quality, particularly the levels of suspended sediment.

The following tables summarise the nature and extent of land based pressures within the catchment up to a distance of 20 kilometres from the designated shellfish area. The likelihood for these pressures to impact on shellfish water quality parameters is discussed. All of the factors discussed at the beginning of this chapter can affect the likelihood for land-based pressures to impact on shellfish waters.

5.2.1 Point Source Pressures

Urban Wastewater Systems

Table 8 lists the urban waste water treatment plants in the catchment up to a distance of 20 kilometres from the shellfish area. Map 18 illustrates these pressures and map references link the map and table. The information in the table was compiled by the WFD Municipal and Industrial Regulation Study in 2008 and includes:

- the distance of the plants from the shellfish area
- the WFD status of the water body within which the plants are located
- the level of treatment available at the plants
- whether the plants are included in the current Water Services Investment Programme 07-09
- the design capacity (in terms of population equivalents (P.E.)) of the plants
- the percentage at which the plants are operating above or below their design capacity currently
- the percentage at which the plants are likely to be operating above or below their design capacity in 2015 based on population projections
- the WFD risk designations associated with the plants and the reasons behind the risk designations

The WFD risk assessment in relation to urban waste water treatment plants was updated in 2008 to feed into the draft RBMPs with a further update currently underway (due for completion by November 2009). The plants were designated as 'at risk' for a variety of reasons including:

- A Insufficient WWTP capacity existing load
- B Insufficient WWTP capacity future load
- C Insufficient assimilative capacity for BOD existing load
- D Insufficient assimilative capacity for BOD future load
- E Insufficient assimilative capacity for nutrients existing load
- F Insufficient assimilative capacity for nutrients future load
- G Historical deterioration in downstream Q value where the Q station is within 3 kilometres of the outfall
- H Downstream Q value is less than 4 where the Q station is within 3 kilometres of the outfall
- I Deterioration in upstream to downstream Q value were the distance between Q stations is less then 3 kilometres
- J Exceedance of bathing water quality within 1 kilometre of the outfall
- K Exceedance of shellfish water quality within 1 kilometre of the outfall
- L Expert opinion

Waste water discharges from waste water treatment plants can contain a wide range of potentially polluting components originating from households, industry and urban areas. These discharges can affect the levels of faecal coliforms, nutrients, dissolved oxygen, suspended sediment, organic wastes and harmful chemicals in receiving waters.

The 2008 risk assessment identified 3 urban waste water treatment plant within the catchment and designated them all as 'at risk' due to insufficient plant capacity and insufficient assimilative capacity in receiving waters. The WFD risk assessment was reviewed by experts in September 2009 with regard to Water Services Investment Programme and waste water licensing actions. The most significant plants were identified on the basis of proximity, plant performance, population equivalent and level of treatment. Kinsale was identified as the key agglomeration in this catchment.

The discharge from the Kinsale agglomeration is to Kinsale Harbour just downstream of the designated shellfish area. The waste water receives only preliminary treatment (comminution). A scheme is included in the current Water Services Investment Programme 2007-2009 (Kinsale Sewerage Scheme) to upgrade the existing collection system and provide secondary waste water treatment including UV disinfection. Construction is ongoing and the collection system will be complete by April 2010 with the treatment plant in operation in January 2011. A licence application was made by Cork County Council in September 2008 (registration number D0132-01) pursuant to the requirements of the Waste Water Discharge (Authorisation) Regulations, 2007.

The largest plant in the catchment is at Bandon with a design capacity of 8,000 P.E. It is currently operating within its design capacity but it has been designated as 'at risk' due to insufficient assimilative capacity in receiving waters for BOD and nutrients. A scheme is included in the current Water Services Investment Programme to upgrade the existing collection system. The existing plant provides secondary treatment and is situated more than 10 kilometres upstream of the shellfish area. A licence application was made by Cork County Council in September 2008 (registration number D0136-01) pursuant to the requirements of the Waste Water Discharge (Authorisation) Regulations, 2007.

Two septic tanks at Innishannon with a combined design capacity of 570 P.E. treat the waste water from the village. Schemes are included in the current Water Services Investment Programme 2007-2009 to upgrade the collection system and provide secondary treatment. A licence application was made by Cork County Council in June 2009 (registration number D0429-01) pursuant to the requirements of the Waste Water Discharge (Authorisation) Regulations, 2007.

TABLE 8 Urban waste water treatment plants

Name	Map Ref	Dist	Status	Treatment level	WSIP 07-09	Capacity PE	% surplus existing	% surplus future	At Risk
Bandon	90	10-20	Moderate	Secondary	Yes	8,000	23 %	-	Yes C D F
Innishannon	154	5-10	nd	Primary	Yes	570	0 %	-21 %	Yes - B
Kinsale	170	0-5	nd	Preliminary	Yes	5,000	-	-	Yes

NOTE A minus figure in the percentage surplus columns means that the plant is working above its design capacity, nd denotes "no data" where plants are located in areas with no WFD status information

Table 9 lists the Combined Sewer Overflows (CSOs) in the catchment up to a distance of 20 kilometres from the designated shellfish area. Map 18 illustrates these pressures and map references link the map and table. Information provided in the table in relation to the CSOs includes:

- the distance of the CSOs from the shellfish area
- the WFD status of the water body within which the CSOs are located

TABLE 9 – Combined Sewer Overflows

CSO Name	Map Ref	Distance	Status
Bandon x 18	541 - 558	10-20	Moderate
Kinsale x 2	515 - 516	0-5	nd
Inishannon	657	5-10	nd

NOTE: nd denotes 'no data' where CSOs are located in areas with no WFD status information

Discharges from CSOs can contain a wide range of potentially polluting components originating from households, industry and urban areas. These discharges, which receive no treatment, can affect the levels of faecal coliforms, nutrients, dissolved oxygen, suspended sediment, organic wastes and harmful chemicals in receiving waters.

The inventory of CSOs compiled during the WFD characterisation process shows that there are 21 known significant CSOs within the catchment. CSOs are a possible source of the faecal contamination indicated by shellfish monitoring. Therefore, they could possibly be affecting shellfish water quality in this shellfish area.

Agricultural IPPCs and land-based finfish farms

TABLE 10 – Agricultural IPPCs and land-based finfish farms

License No.	Map Ref	Distance	Status	Nature	Note
P0661-01	74	10-20	Good		750 sows

Table 10 lists the agricultural IPPCs and finfish farms in the catchment up to a distance of 20 kilometres from the designated shellfish area. Map 19 illustrates these pressures and map references link the map and table. Information provided in the table in relation to the agricultural IPPCs and land-based finfish farms includes:

- the distance of the units from the designated shellfish area
- the WFD status of the water bodies within which the units are located.
- Any available additional information e.g. the spreading radius for spreading of slurry

Slurry from pig farms is usually landspread and can affect levels of faecal coliforms, nutrients, dissolved oxygen and organic wastes if it is lost to waters. Land based finfish farms can be associated with elevated nutrient levels due to fish excretion and excess feed input.

There is 1 pig farm within the catchment. Having regard to the size of the operation and its distance from the shellfish area, it is considered unlikely that it is affecting shellfish water quality in this shellfish area.

Abstractions

TABLE 11 Abstractions

Name	Map Ref	Type	Distance	Status	Abs Rate m^3 day^{-1}	At Risk (Ratio)
Kilmore	135	Groundwater	10-20	Good	5	No
Templemartin	162	Groundwater	10-20	Good	12	No
Ballinadee	1376	Groundwater	5-10	nd	18	No
Castlepark	1414	Groundwater	0-5	nd	10	No
Bored well	1420	Groundwater	10-20	High	10	No
Eli Lilly	1443	Groundwater	0-5	nd	636	No
Bandon	2173	River	10-20	Moderate	3,600	No
Bandon	2226	River	10-20	Moderate	9,090	No
Clashanamid	2499	Groundwater	10-20	High	10	No
Garranes	2500	Groundwater	10-20	Good	2	No
Knockanleigh	2501	Groundwater	10 20	Good	1	No
Rathroon	2505	Groundwater	5-10	Poor	0	No

NOTE: nd denotes 'no data' where abstractions are located in areas with no WFD status information

Table 11 lists the abstractions in the catchment up to a distance of 20 kilometres from the designated shellfish area. Map 20 illustrates these pressures and map references link the map and table. Information provided in the table in relation to abstractions includes:

- the type of abstraction (river, lake or groundwater)
- the distance of the abstraction from the designated shellfish area
- the WFD status of the water body within which the abstraction is located
- the abstraction rate, expressed in cubic metres per day
- the WFD risk designations associated with the abstractions and the reasons behind the designations

The WFD risk assessment in relation to abstractions was updated in 2008 to feed into the draft RBMPs. Abstractions are deemed to be 'at risk' if they account for a significant proportion (>10%) of the resource. For river abstractions, the net abstraction is expressed as a proportion of the Q95 flow (i.e. the flow that is exceeded 95% of the time). For lake abstractions, the net abstraction is expressed as a proportion of the Q50 inflow to the lake (i.e. the long term median inflow). For groundwater abstractions, the net abstraction is expressed as a proportion of recharge volume (i.e. long term average recharge across the groundwater bodies).

Generally it is very unlikely that abstractions would lead to non-compliances with the shellfish standards for salinity in shellfish areas. Abstractions that represent a large proportion of their corresponding resources can decrease available dilution capacity but this is also unlikely to affect shellfish areas.

There are 12 abstractions in the catchment. All but 2 of them are groundwater abstractions and none of them have been designated as 'at risk'. As none of them represent a significant proportion of their corresponding resources, they are unlikely to be affecting any aspect of shellfish water quality in this shellfish area.

Water Treatment Plants

TABLE 12 - Water treatment plants

Name	Map Ref	Distance	Status	Risk	Risk
Innishannon	203	10 20	Moderate	Yes	expert judgement
Bandon	392	10-20	Moderate	Yes	expert judgement

Table 12 lists the water treatment plants in the catchment up to a distance of 20 kilometres from the designated shellfish area. Map 20 illustrates these pressures and map references link the map and table. Information provided in the table in relation to the water treatment plants includes.

- the distance of the plants from the designated shellfish area
- the WFD status of the water bodies within which the plants are located
- the WFD risk designations associated with the plants and the reasoning behind the designations

The WFD risk assessment for water treatment plants dates back to the Article V characterisation process which was undertaken in 2004 and 2005. At that time expert opinion within the Local Authorities was used to indicate whether plants were 'at risk' of impacting on their surrounding water environment.

Discharges from Water Treatment Plants (WTPs) can affect the levels of suspended solids, algae and pathogens in receiving waters. Aluminium can also be present from the treatment process.

There are 2 water treatment plants in the catchment, both of which have been designated as 'at risk' of impacting their surrounding water environment. However, they are an unlikely source of the water quality issues indicated by monitoring in the vicinity of the shellfish area and therefore they are unlikely to be affecting shellfish water quality in this shellfish area.

Integrated Pollution Prevention and Control Industries

TABLE 13 - Integrated Pollution Prevention Control Licenses

Name	Map Ref	Distance	Status	Risk
AIBP Ltd T A AIBP Bandon (meat processors)	28	10-20	Moderate	Yes H
Eli Lilly SA Irish Branch (pharmaceutical)	48	0-5	nd	No
Schering-Plough (Ireland) Co. (pharmaceutical)	54	10-20	Good	Yes C D I F

NOTE nd denotes 'no data' where industries are located in areas with no WFD status inform... (i.e.

Table 13 lists the IPPC licensed industries in the catchment up to a distance of 20 kilometres from the designated shellfish area. Map 20 illustrates these pressures and map references link the map and table. Information provided in the table in relation to the licensed industries includes:

- the distance of the industries from the designated shellfish area
- the WFD status of the water bodies within which the industries are located

- the WFD risk designations associated with the industries and the reasoning behind the designations

The WFD risk assessment in relation to IPPC licensed industries was updated in 2008 to feed into the draft RBMPs. The industries were designated as 'at risk' for a variety of reasons which are outlined on page 58.

Discharges from IPPC licensed industries are diverse and can affect the levels of faecal coliforms, nutrients, suspended sediments, dissolved oxygen as well as a wide range of chemicals in receiving waters.

There are 3 IPPC licensed industries within the catchment. Two of them have been designated as 'at risk' due to insufficient assimilative capacity in receiving waters for BOD and nutrients and deterioration in downstream water quality. Having regard to the results of the risk assessment, the nature of the industries and their distance from the shellfish area, it is considered unlikely that these industries are affecting shellfish water quality in this shellfish area.

Section 4 Licensed Industries

TABLE 14 - Section 4 Licenses

Name	Map Ref	Distance	Status	Risk
Cahalane's Garage Bandon Ltd	70	10-20 km	Moderate	No
Fachtna Crowley Construction Ltd	90	5-10 km	nd	No
Fachtna Crowley Construction Ltd	91	0-5 km	nd	No
Fourleaf Building Company	97	0-5 km	nd	No
Lochplace Developments Ltd	120	0-5 km	nd	No
McInerney Construction Ltd	125	direct	nd	No

Note: 'nd' means 'no data' where industries are located in areas with no WFD status information

Table 14 lists the Section 4 licensed industries in the catchment up to a distance of 20 kilometres from the designated shellfish area. Map 20 illustrates these pressures and map references link the map and table. Information provided in the table in relation to the industries includes:

- the distance of the industries from the designated shellfish area
- the WFD status of the water bodies within which the industries are located
- the WFD risk designations associated with the industries and the reasoning behind the designations

The WFD risk assessment in relation to Section 4 licensed industries was updated in 2008 to feed into the draft RBMPs. The industries were designated as 'at risk' for a variety of reasons which are outlined on page 58.

Discharges from Section 4 licensed industries are diverse and can affect the levels of faecal coliforms, nutrients, suspended sediments, dissolved oxygen as well as a wide range of chemicals in receiving waters.

There are 6 Section 4 licensed industries in the catchment and none of them have been designated as 'at risk'. Having regard to the results of the risk assessment, the nature

of the industries and their distance from the shellfish area, it is considered unlikely that these industries are affecting shellfish water quality in this shellfish area.

Quarries, mines, landfills and contaminated lands

TABLE 15 - Quarries, mines, landfills and contaminated lands

Name	Map Ref	Distance	Status	Risk	Notes
Kilmore Concrete	318	10-20	Good	No	Quarry
Keohane Readymix Ltd	325	5-10	nd	No	Quarry
Bandon landfill	231	10-20	Good	No	Unlined
Blackstieks Landfill	234	10-20	Good	No	Unlined
Kinsale Landfill	263	0-5	nd	No	Unlined
AIBP Ltd T/A AIBP Bandon	8	10-10	Moderate	No	Contaminated site

NOTE: nd denotes 'no data' where operations are located in areas with no WFD status information

Table 15 lists the quarries, mines, landfills and contaminated lands in the catchment up to a distance of 20 kilometres from the designated shellfish area. Map 20 illustrates these pressures and map references link the map and table. Information provided in the table in relation to the plants includes:

- the distance of the industries from the designated shellfish area
- the WFD status of the water bodies within which the plants are located
- the WFD risk designations associated with the industries

Some of the WFD risk assessments in relation to these point sources were updated in 2008 to feed into the draft RBMPs but some of the assessments date back to the WFD characterisation process in 2004 and 2005. Expert opinion within Local Authorities was used to assign risk designations to quarries and landfills but monitoring data was used for mines and contaminated lands.

Mining and quarrying operations can impact on levels of suspended solids and metals in receiving waters whilst landfills and contaminated sites can be more diverse and impact on the levels of nutrients, suspended sediments and oxygen levels as well as metals and other chemicals.

There are 2 quarries, 3 landfills and 1 contaminated site within the catchment. None of them have been designated as 'at risk' of impacting their surrounding water environment. Having regard to the results of the risk assessment, the nature of the operations and their distance from the shellfish area, it is considered unlikely that these operations are affecting shellfish water quality in this shellfish area.

5.2.2 Diffuse Source Pressures

On-site waste water treatment systems

TABLE 16 - On-site waste water treatment systems

Risk	Number	% of total
Total number	6,443	-
Number per km^2 in the catchment	10.54	-
Number per km^2 nationally	1.4	-
Number that are high risk to surface waters from pathogens	5,890	91.41%
Number that are high risk to groundwaters from pathogens	3,042	47.21%
Number that are high risk to surface waters from phosphorus	-	-
Number that are high risk to groundwaters from phosphorus	3,050	47.33%
High likelihood of inadequate percolation of leachate	4,066	63.10%

Table 16 summarises the numbers of on-site waste water treatment systems (OSWWTS) within the catchment up to a distance of 20 kilometres from the designated shellfish area and outlines how many of them are located in areas of high risk to surface and groundwaters from pathogens and phosphorus and how many of them are located in areas where the likelihood of inadequate percolation of leachate is high. Map 21 illustrates the locations of the OSWWTSs while Maps 6 to 10 illustrate the risk to surface and groundwaters and the likelihood of inadequate percolation, all of which is based on soil, sub-soil and geological characteristics. Generally, systems located in areas where effluent cannot get away underground pose a risk to surface waters while systems located in areas where the effluent moves too quickly through the subsoil pose a risk to groundwaters. OSWWTS effluent can impact on the levels of faecal coliforms, suspended sediments, nutrients and dissolved oxygen in receiving waters. In addition, the use of household cleaning products can introduce a range of harmful chemicals to the water environment.

There are 6,443 systems in the catchment and their density is much higher than the national average. The risk to surface waters from pathogens and phosphorus is high throughout the catchment as is the likelihood of inadequate percolation. Many of these systems are therefore located in hydrologically unsuitable conditions. Other factors which affect the likelihood of these systems to impact surface and groundwaters are whether suitable types of systems are selected, whether they are installed correctly, whether they are properly maintained and whether they are situated close to the designated shellfish area or to ditches, drains, watercourses, wells or boreholes. It is therefore likely that a substantially smaller number than the total number of systems in the catchment are posing a risk to surface and groundwaters. Shellfish monitoring indicates faecal contamination in this shellfish area which could be arising from this source. These systems therefore could possibly be affecting shellfish water quality in this shellfish area

Agriculture

TABLE 17 - Livestock units and chemical fertiliser usage

Indicator	Catchment (per ha of farmed land)	National Average (per ha of farmed land)
Livestock units	1.67 LU	1.20 LU
Nitrogen fertiliser usage	134.28 kg	92.09 kg

Indicator	Catchment (per ha of farmed land)	National Average (per ha of farmed land)
Phosphorus fertiliser usage	10.65 kg	9.74

Nitrates Directive limit – 170 kg N per hectare approx. 2 LU per hectare
Nitrates Directive derogation 250 kg N per hectare approx. 3 LU per hectare.

Table 17 provides an estimate of the average number of dairy and drystock livestock units and the average loadings of nitrogen and phosphorus chemical fertiliser per hectare of farmed land within the contributing catchment area. Maps 22, 23 and 24 illustrate this. The figures beneath the table express the nitrate limit (and Ireland's derogation) under the Nitrates Directive in terms of livestock densities. Discharges related to agriculture can affect the levels of faecal coliforms, suspended sediments, nutrients and dissolved oxygen in receiving waters. In addition, the use of pesticides and herbicides can introduce a range of harmful chemicals to the water environment.

Approximately 75% of the area of this catchment is farmed land and the estimates of livestock density and fertiliser usage are higher than the national averages. The EPA's diffuse model risk assessment, which investigates the relationship between catchment attributes (percentages of diffuse land cover including agriculture), water chemistry and ecological status, highlights many diffuse risk areas in the catchment (Map 13). However, the prevalence of dry soils in the catchment (Map 5) means that the risk of runoff from agricultural land is low. Agriculture is a possible source of the faecal contamination indicated by shellfish monitoring. Therefore, agriculture could possibly be affecting shellfish water quality in this shellfish area.

Forestry

TABLE 18 - Forestry types

Type	Area	Percentage of area
Conifers	2.87 km^2	1.2 %
Broadleaves	2.40 km^2	1.0 %
Mixed	2.69 km^2	1.2 %
Other	0 km^2	0 %
Cleared	0.60 km^2	0.3 %
Unknown	0.35 km^2	0.2 %
Total	8.91 km^2	3.8 %
Nationally	6,795 km^2	10.0 %

Table 18 presents the area and percentage area of the catchment under the various types of forest cover. Maps 25, 26 and 27 illustrate this. Forestry activity can impact on the pH of receiving waters as well as on the levels of suspended solids and nutrients. It is also associated with the use of pesticides which can introduce harmful chemicals to the water environment.

There is 8.91 km^2 of forested land in this catchment but the percentage area under forest cover is quite low compared to the national average. Unlike agriculture, the location of forestry activity is known and the forestry activity does not occur in close proximity to the shellfish area. The EPA's diffuse model risk assessment, which investigates the relationship between catchment attributes (percentages of diffuse land cover including forestry), water chemistry and ecological status, highlights some

diffuse risk areas within the catchment (Map 13). Also, the more recent risk assessment, undertaken by the WFD Forest and Water study, indicates risk areas of in relation to acidification, eutrophication and sedimentation (Maps 25, 26 and 27). However, these are located in the upper reaches of the catchment, far away from the shellfish area. Therefore, it is unlikely that forestry is affecting shellfish water quality in this shellfish area.

5.2.3 Morphology Pressures

There are no freshwater morphology structures within the catchment.

5.3 Summary of Key Pressures

Information from existing data sources has been used to identify all of the pressures acting on the shellfish area and to assess their likelihood to be affecting shellfish water quality in this shellfish area.

The status at this site is impacted by faecal coliforms which are indicative of sewage related key pressures. WFD monitoring indicated issues with the levels of chromium, dissolved inorganic nitrogen, biochemical oxygen demand, and dissolved oxygen. However, the available shellfish samples are compliant with shellfish standards for these parameters

This summary section highlights:

- **key pressures**

The key pressures are those identified as most likely to be affecting shellfish water quality. The final PRP will confirm and focus on these key pressures.

- **potential secondary pressures**

These pressures are identified as possibly affecting shellfish water quality. The final PRP will either confirm them as key pressures or eliminate them from further consideration.

5.3.1 Key Pressures

1. Municipal wastewater systems

The 2008 risk assessment identified 3 urban waste water treatment plant within the catchment and designated them all as 'at risk' due to insufficient plant capacity and insufficient assimilative capacity in receiving waters. The WFD risk assessment was reviewed by experts in September 2009 with regard to Water Services Investment Programme and waste water licensing actions. The most significant plants were identified on the basis of proximity, plant performance, population equivalent and level of treatment. Kinsale was identified as the key agglomeration in this catchment.

The discharge from the Kinsale agglomeration is to Kinsale Harbour just downstream of the designated shellfish area. The waste water receives only preliminary treatment (comminution). A scheme is included in the current Water Services Investment Programme 2007-2009 (Kinsale Sewerage Scheme) to upgrade the existing collection system and provide secondary waste water treatment including UV disinfection. Construction is ongoing and the collection system will be complete by April 2010 with the treatment plant in operation in January 2011. A licence application was made by Cork County Council in September 2008 (registration number D0132-01) pursuant to the requirements of the Waste Water Discharge (Authorisation) Regulations, 2007.

The largest plant in the catchment is at Bandon with a design capacity of 8,000 P.E. It is currently operating within its design capacity but it has been designated as 'at risk' due to insufficient assimilative capacity in receiving waters for BOD and nutrients. A

scheme is included in the current Water Services Investment Programme to upgrade the existing collection system. The existing plant provides secondary treatment and is situated more than 10 kilometres upstream of the shellfish area. A licence application was made by Cork County Council in September 2008 (registration number D0136-01) pursuant to the requirements of the Waste Water Discharge (Authorisation) Regulations, 2007.

Two septic tanks at Innishannon with a combined design capacity of 570 P.E. treat the waste water from the village. Schemes are included in the current Water Services Investment Programme 2007-2009 to upgrade the collection system and provide secondary treatment. A licence application was made by Cork County Council in June 2009 (registration number D0429-01) pursuant to the requirements of the Waste Water Discharge (Authorisation) Regulations, 2007.

The inventory of CSOs compiled during the WFD characterisation process shows that there are 21 known significant CSOs within the catchment. CSOs are a possible source of the faecal contamination indicated by shellfish monitoring. Therefore, they could possibly be affecting shellfish water quality in this shellfish area.

2. On-site waste water treatment plants

There are 6,443 systems in the catchment and their density is much higher than the national average. The risk to surface waters from pathogens and phosphorus is high throughout the catchment as is the likelihood of inadequate percolation. Many of these systems are therefore located in hydrologically unsuitable conditions. Other factors which affect the likelihood of these systems to impact surface and groundwaters are whether suitable types of systems are selected, whether they are installed correctly, whether they are properly maintained and whether they are situated close to the designated shellfish area or to ditches, drains, watercourses, wells or boreholes. It is therefore likely that a substantially smaller number than the total number of systems in the catchment are posing a risk to surface and groundwaters. Shellfish monitoring indicates faecal contamination in this shellfish area which could be arising from this source. These systems therefore could possibly be affecting shellfish water quality in this shellfish area.

3. Agriculture

Approximately 75% of the area of this catchment is farmed land and the estimates of livestock density and fertiliser usage are higher than the national averages. The EPA's diffuse model risk assessment, which is based on percentages of diffuse land cover including agriculture, highlights many diffuse risk areas in the catchment (Map 13). However, the prevalence of dry soils in the catchment (Map 5) means that the risk of runoff from agricultural land is low. Agriculture is a possible source of the faecal contamination indicated by shellfish monitoring. Therefore, agriculture could possibly be affecting shellfish water quality in this shellfish area.

5.3.2 Potential Secondary Pressures

4. Marine Activities

Kinsale port is situated approximately half a kilometre downstream of the shellfish area. The port activities are a possible source of the faecal contamination indicated by shellfish flesh monitoring and the issues with nutrient, DO and BOD levels indicated by WFD monitoring. Therefore, these activities are possibly be affecting shellfish water quality in this shellfish area.