

Marine Licence Application for Construction Projects

Version 1.0

Marine (Scotland) Act 2010

Acronyms

Please note the following acronyms referred to in this application form:

BPEO	Best Practicable Environmental Option
EIA	Environmental Impact Assessment
ES	Environmental Statement
MHWS	Mean High Water Springs
MMO	Marine Mammal Observer
MPA	Marine Protected Area
MS-LOT	Marine Scotland – Licensing Operations Team
PAM	Passive Acoustic Monitoring
SAC	Special Area of Conservation
SNH	Scottish Natural Heritage
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
WGS84	World Geodetic System 1984

Explanatory Notes

The following numbered paragraphs correspond to the questions on the application form and are intended to assist in completing the form. These explanatory notes are specific to this application and so you are advised to read these in conjunction with the Marine Scotland Guidance for Marine Licence Applicants document.

1. Applicant Details

The person making the application who will be named as the licensee.

2. Agent Details

Any person acting under contract (or other agreement) on behalf of any party listed as the applicant and having responsibility for the control, management or physical deposit or removal of any substance(s) or object(s).

3. Payment

Indicate payment method. Cheques must be made payable to: The Scottish Government.

Marine licence applications will not be accepted unless accompanied by a cheque for the correct application fee, or if an invoice is requested, until that invoice is settled. Target timelines for determining applications do not begin until the application fee is paid.

4. Application Type

Indicate if the application is for a new construction site or an existing construction site. Provide the existing or previous consent/licence number and expiry date if applicable.

5. Project Details

- (a) Give a brief description of the project (e.g. construction of a new sea outfall).
- (b) Provide the total area of proposed works in square metres.
- (c) Provide the proposed start date of the project. The start date will not be backdated, since to commence a project for which a licence has not been obtained will constitute an offence, which may result in appropriate legal action. A licence is normally valid for the duration of the project but not exceeding 3 years. If a project will not be completed before a marine licence lapses, it will be necessary for licence holders to re-apply for a further licence to continue any ongoing work at least 14 weeks prior to the expiry date of the licence. **Target duration for determination of a marine licence application is 14 weeks.**
- (d) Provide the proposed completion date of the project.
- (e) Provide the cost of the works seawards of the tidal limit of MHWS. This estimate should only cover

work taking place below the tidal level of MHWS and must take into consideration the cost of materials, labour fees etc.

- (f) Describe the location of the proposed works. Include a list of the latitude and longitude co-ordinates (WGS84) of the boundary points of the proposed project. WGS84 is the World Geodetic System 1984 and the reference co-ordinate system used for marine licence applications. Co-ordinates taken from GPS equipment should be set to WGS84. Coordinates taken from recent admiralty charts will be on a WGS84 compatible datum. Ordnance survey maps do not use WGS84. In a few cases, (e.g. laying of long pipelines) it may only be practicable to supply co-ordinates for the start and end points.

Example: For positions read from charts the format should be as in the example: 55°55.555'N 002°22.222'W (WGS84). The decimal point specifies that decimals of minutes are used and the datum is stated explicitly. If seconds are used then the format should be as in the example: 55°55'44"N 2°22'11"W (WGS84).

It is important that the correct positions, in the correct format, are included with this application, as any errors will result in the application being refused or delayed.

To supplement your application, please provide photographs of the project location and submit these with your application. Please also provide a suitably scaled extract of an Ordnance Survey Map (1:2,500 scale but not more than 1:10,000) or Admiralty Chart which must be marked to indicate:

- the full extent of the works in relation to the surrounding area;
- latitude and longitude co-ordinates defining the location of the works;
- the level of MHWS;
- any adjacent SAC, SPA, SSSI, MPA, Ramsar or similar conservation area boundary.

Drawings and plans will be consulted upon. If they are subject to copyright, **it is the responsibility of the applicant to obtain necessary approvals to reproduce the documents and to submit suitably annotated copies with the application.**

Sewer outfalls, discharge pipes for industrial waste etc. The size and description of the pipe must be shown on the longitudinal sections and also details of its supports, foundations, methods of jointing and details of any tidal flaps.

Bridges over tidal waters: An elevation with longitudinal and cross-sections of the bridge to a suitable scale must show the dimensions of the spans and width of piers, etc. above and below MHWS and the maximum and minimum heights of the undersides of the superstructures above MHWS. The headroom above MHWS and the width of span of the nearest bridges, if any, above and below the site must be stated.

Tunnels under tidal waters: The longitudinal section of the tunnel must show the distances between the bed of the river or estuary and the top of the tunnels. Cross-sections must show the internal and external dimensions of the tunnel and particulars of construction. When a proposed future dredging level is known this must also be shown on all sections.

Overhead cables: Catenary must be supplied in addition to the site plan showing the minimum clearance of the cable at MHWS and the electrical clearance allowed.

- (g) Indicate if the project is located within the jurisdiction of a statutory harbour authority and provide details of the statutory harbour authority where relevant.
- (h) Provide a full method statement, including schedule of works and the ultimate fate of the structure.
- (i) Provide assessment of the potential impacts the works may have, including interference with other uses of the sea. Please include details of areas of concern e.g. designated conservation areas, such as a SAC, SPA, SSSI, MPA or Ramsar site and shellfish harvesting areas. Further guidance on designated conservation areas can be obtained from SNH at this website:

<http://gateway.snh.gov.uk/sitelink/index.jsp> and guidance on shellfish harvesting areas can be obtained from <http://www.foodstandards.gov.scot/> with regards to the Shellfish Waters Directive (2006/113/EC) which has parameters set to protect the water quality in which edible shellfish are grown.

Applicants should also be aware of the need to pay due regard to coastal and marine archaeological matters and attention is drawn to Historic Scotland's Operational Policy Paper HP6, "Conserving the Underwater Heritage".

Any application for beach replenishment works must be cross checked as to whether the proposed site is a designated bathing water site. If so, all physical works should ideally be done outwith the Bathing Water Season (1st June to 15th September). Further guidance on the Bathing Waters Directive (2006/7/EC) can be obtained from <http://apps.sepa.org.uk/bathingwaters/>.

Where there are potential impacts from the works, please provide details of proposed mitigation, such as use of MMOs or PAM, in response to potential impacts.

6. Deposits and/or Removals

- (a) Complete the table to indicate all permanent substances or objects to be deposited and/or removed from below MHWS. If you propose using types of substances or objects for which a specific box is not provided in the table, please describe the nature of such substances or objects in the box marked "other".
- (b) Please indicate the method of delivery of any substance(s) or object(s) to be placed below MHWS.
- (c) Where the proposed work involves salt marsh feeding, beach replenishment or land reclamation the description of the substances or objects must include details of its chemical quality. Where the substances or objects have not been chemically analysed, MS-LOT may request representative samples for analysis or require the applicant to arrange for analyses to be undertaken before the marine licence application can be determined.
- (d) If temporary deposits are required, please provide details as with the permanent deposits above. The temporary deposit location details (Latitude and Longitude WGS84) must be added to the form, and the period of time the site will be used must be provided. If granting a licence, MS-LOT will include on the document details of any area that has been approved as a temporary deposit site.

7. Disposal of Dredged Substance(s) or Object(s) at Sea

- (a) If you are proposing to dispose of any excess substance(s) or object(s) arising from the project at sea, a separate marine licence will be required (see Dredging and Sea Disposal application form). The granting of a marine licence for construction projects does not imply that a marine licence for sea disposal will also be granted as different assessment criteria are used to determine each type of application. If a separate application is being submitted for dredging and sea disposal then this must be accompanied with a BPEO report.
- (b) Provide the quantity of dredged substance(s) or object(s) for sea disposal in wet tonnes.

8. Noise Monitoring

Under the Marine Strategy Regulations (2010), there is now a requirement to monitor loud, low to mid frequency (10Hz to 10kHz) impulsive noise. Activities where this type of noise is produced include seismic airguns, other geophysical surveys (<10kHz), pile driving, explosives and certain acoustic deterrent devices. Where noisy activity is being undertaken, you must complete an initial registration form for the noise registry which allows you to provide details on the proposed work. Completion of a 'close-out' form, which allows licensees to provide details of the actual dates and locations where the activities occurred, is also required within 12 weeks of the completion of the 'noisy' activity or, in the case of prolonged activities such as piling for harbour construction or wind farms, at quarterly intervals or after each phase of foundation installation.

These forms can be downloaded from:

<http://www.scotland.gov.uk/Topics/marine/science/MSInteractive/Themes/noise-reduction>

Marine licence applications will not be accepted until this form has been completed and submitted.

9. Statutory Consenting Powers

Please describe in the answer to this question what (if any) statutory responsibilities you (or your client) have to consent any aspect of the project.

10. Scotland's National Marine Plan

Scotland's National Marine Plan has been prepared in accordance with the EU Directive 2014/89/EU, which came into force in July 2014. The Directive introduces a framework for maritime spatial planning and aims to promote the sustainable development of marine areas and the sustainable use of marine resources. It also sets out a number of minimum requirements all of which have been addressed in this plan. In doing so, and in accordance with article 5(3) of the Directive, Marine Scotland have considered a wide range of sectoral uses and activities and have determined how these different objectives are reflected and weighted in the marine plan. Land-sea interactions have also been taken into account as part of the marine planning process. Any applicant for a marine licence should consider their proposals with reference to Scotland's National Marine Plan. A copy of Scotland's National Marine Plan can be found at: <http://www.gov.scot/Publications/2015/03/6517/0>

Indicate whether you have considered the project with reference to Scotland's National Marine Plan and provide details of considerations made with reference to the policies, including but not limited to General Policies 7 and 13 (GEN 7 and GEN 13), that have been considered. If you have not considered the project with reference to Scotland's National Marine Plan please provide an explanation.

11. Pre-Application Consultation

Certain activities will be subject to public pre-application consultation. Activities affected will be large projects with the potential for significant impacts on the environment, local communities and other legitimate uses of the sea. The new requirement will allow those local communities, environmental groups and other interested parties to comment on a proposed development in its early stages – before an application for a marine licence is submitted. Further information can be obtained from: <http://www.scotland.gov.uk/Resource/0043/00439649.pdf>

If applicable, please provide your pre-application consultation report with your application.

12. Consultation (other than carried out under pre-application consultation)

Provide details of all bodies consulted and give details of any consents issued including date of issue.

13. Environmental Assessment

- (a) Under the Marine Works Environmental Impact Assessment (EIA) Regulations 2007, there may be a requirement for certain projects to undergo an EIA and produce an ES. If EIA is required, MS-LOT will not determine a marine licence application until the EIA consent decision in respect of the marine licence application has been reached. Please confirm if the project falls under Annex I or II of Directive 85/337/EEC: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32011L0092&from=EN> in relation to the Marine Works (EIA) Regulations 2007.

Marine licence applications for proposals which fall under the regulations will not be accepted unless a screening opinion has been issued in relation to this.

- (b) Please indicate if an EIA has been undertaken and whether it was for the marine licence application to which this application relates or for any other EIA regulator (e.g local authority). Please attach any previous ES to the application.

MS-LOT will not determine a marine licence application until the EIA consent decision in respect of any regulated activity associated with the marine licence application has been reached.

14. Associated Works

Indicate whether the application is associated with any other marine projects (e.g. land reclamation, marine/harbour construction works, dredging and sea disposal etc). If this is the case, provide reference/licence number for the related marine projects.

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It is the responsibility of the applicant to obtain any other consents or authorisations that may be required.

Under Section 54 of the Marine (Scotland) Act 2010, all information contained within and provided in support of this application will be placed on a Public Register. There are no national security grounds for application information not going on the Register under the 2010 Act.

Public Register

Do you consider that any of the information contained within or provided in support of this application should not be disclosed:

- (a) for reasons of national security; YES NO
- (b) for reasons of confidentiality of commercial or industrial information where such confidentiality is provided by law to protect a legitimate commercial interest? YES NO

If **YES**, to either (a) or (b), please provide full justification as to why all or part of the information you have provided should be withheld.

WARNING

It is an offence under the Act under which this application is made to fail to disclose information or to provide false or misleading information.

Target duration for determination is 14 weeks. Please note that missing or erroneous information in your application and complications resulting from consultation may result in the application being refused or delayed.

Marine licence applications will not be accepted unless accompanied by a cheque for the correct application fee, or if an invoice is requested, until that invoice is settled. Target timelines for determining applications do not begin until the application fee is paid.

Declaration

I declare to the best of my knowledge and belief that the information given in this form and related papers is true.

Signature

[Redacted]

Date

19/07/2019

Name in BLOCK LETTERS

THOMAS PICKETT

Application Check List

Please check that you provide all relevant information in support of your application, including but not limited to the following:

- Completed and signed application form
- Project Drawings
- Maps/Charts
- Co-ordinates of the boundary points of the area of harbour jurisdiction (if you are a statutory harbour authority)
- Method Statement
- Photographs of the location of the project
- Additional information e.g. consultation correspondence (if applicable)
- Noise Registry – Initial Registration Form (if applicable)
- Pre-application Report (if applicable)
- Environmental Statement (if applicable)
- Payment (if paying by cheque)

1. Applicant Details

Title: **Mr** Initials: **T** Surname: **Greaves**

Trading Title (if appropriate): **Esso Petroleum Company, Limited**

Address: **Ermyn House, Ermyn Way, Leatherhead, Surrey KT22 8UX**

Name of contact (if different):

Telephone No. (inc. dialing code): **0117 9386218**

Email: **tim.greaves@exxonmobil.com**

Statutory Harbour Authority? YES NO

If **YES**, please provide a list of the latitude and longitude co-ordinates (WGS84) of the boundary points of the area of harbour jurisdiction using Appendix 01 Additional Co-ordinates form if necessary.

2. Agent Details (if any)

Title: **Mr** Initials: **T** Surname: **Pickett**

Trading Title (if appropriate): **Arcadis (UK) Limited**

Address: **3rd Floor, Charter House, 62-68 Hills Road, Cambridge, CB2 1LA**

Name of contact (if different):

Telephone No. (inc. dialing code): **07741 290932**

Email: **tom.pickett@arcadis.com**

3. Payment

Enclosed Cheque Invoice

Contact and address to send invoice to:

Applicant Agent Other

If **OTHER**, please provide contact details:

Title: Initials: Surname:

Address:

Email:

4. Application Type

Is this application for a new construction site or an existing construction site:

New Site Existing Site

If an **EXISTING SITE**, please provide the consent/licence number and expiry date:

Consent/Licence Number	Expiry Date
Application reference no. 06888 is currently submitted for other works at this site, but has not yet been decided.	

5. Project Details

(a) Brief description of the project (e.g. construction of a new sea outfall):

Construction and installation of an Oleophilic Bio Barrier (OBB) at the existing foreshore area on site.

(b) Total area of the proposed works (in square metres):

~337 m²

(c) Proposed start date (**Target duration for determination of a marine licence application is 14 weeks**):

14/08/19

(d) Proposed completion date:

14/10/19

(e) Cost of the works seawards of the tidal limit of MHWS:

£ ~£450,000

(f) Location:

Works to be carried out at the existing foreshore area on site, adjacent to Dunglass House. The Site is located on the north bank of the River Clyde, approximately 0.3 km to the west of the village of Bowling and 4 km to the south east of Dumbarton. See attached photographs and plan showing the area with MHWS

Latitude and Longitude co-ordinates (WGS84) defining the extent of the project (continue on Appendix 01 Additional Co-ordinates form if necessary):

Latitude										Longitude												
5	5	°	5	5	.	7	5	7	'	N	0	0	4	°	3	0	.	2	1	4	'	W
5	5	°	5	5	.	7	5	5	'	N	0	0	4	°	3	0	.	1	9	3	'	W
5	5	°	5	5	.	7	4	9	'	N	0	0	4	°	3	0	.	1	9	6	'	W
5	5	°	5	5	.	7	5	1	'	N	0	0	4	°	3	0	.	2	1	6	'	W
		°			.				'	N				°			.				'	W
		°			.				'	N				°			.				'	W
		°			.				'	N				°			.				'	W
		°			.				'	N				°			.				'	W
		°			.				'	N				°			.				'	W
		°			.				'	N				°			.				'	W
		°			.				'	N				°			.				'	W

(g) Is the project located within the jurisdiction of a statutory harbour authority?

YES NO

If YES, please specify statutory harbour authority:

Clydeport Operations Limited (Peel Ports)

(h) Method statement including schedule of work (continue on separate sheet if necessary):

Construction Sequence
 Construction of the shoreline barrier will consist of the following activities

- Marking out of laydown areas for imported materials removed armour and riprap and other equipment or materials;
- Creation of temporary access to foreshore area to include breaking out of above ground obstructions e.g wall and reduction of the gradient to the foreshore area to allow machine access;
- Removal of existing shoreline armour in the footprint of the OBB Existing shoreline armour and riprap may be stockpiled for reuse if deemed suitable from visual inspection Visually impacted armour and riprap shall be disposed in an approved off site disposal facility;
- Removal of visually impacted material within the barrier footprint if observed Material removal areas shall be backfilled to the original grade with clean sand Removal activities shall be sequenced in a manner that allows for removal and backfilling to be completed within the same tidal cycle The Contractor may remove visually impacted material if the removal area can be backfilled within the same tidal cycle Removed material shall be disposed in an approved off site disposal facility;
- Preparation of the material surface including placement of sand as needed to create smooth surface free of debris protrusions and/or other deleterious materials;
- Placement of Reactive Core Mat (RCM) panels;
- Placement of Geocomposite panels;
- Placement of filter material;
- Placement of armour;
- Reinstatement of temporary access to pre existing condition; and
- Support zone removal and re instatement to their pre construction condition

(i) Potential impacts the works may have (including details of areas of concern e.g designated conservation and shellfish harvesting areas) and proposed mitigation in response to potential impacts (continue on separate sheet if necessary):

During construction works on the foreshore area there is a potential for short term release of hydrocarbon sheens Works will be scheduled to take place within single tides in order to minimise the open exposure of impacted materials and reduce the potential for sheens being released As a secondary measure booms are to be utilised to limit the extent and contain any sheening that may occur during the proposed works Overall activities considered to provide betterment rather than impact

The construction works are to be undertaken in line with discussions held previously with SNH with particular attention to mitigating the impacts posed to wintering Red Shanks During previous discussions and a site meeting SNH concerns were discussed and mitigation measures were agreed upon in order to minimise disturbance to the Red Shank population It was acknowledged during the site meeting that the proposed works are not within 150m of the Red Shanks when they are present on the mudflats on the south side of the Clyde where they are predominantly observed See attached "Applied Ecology" report as demonstration that even though the site is designated as an SPA during several periods of observation at the site there was a zero count of Red Shanks feeding on the foreshore area

It is understood that the works are just outside the required 30m exclusion zone for a known otter lay up This was discussed with SNH on site but not considered to present any issues provided works are ceased while the otter leaves or returns to the lay up or swims nearby to the work area

An email summary of the site meeting and discussions with SNH is attached to this application as well as "Applied Ecology" report and plans showing the works area with 150m and 30m buffers required for Red Shanks and Otters respectively

A watching brief will be undertaken in relation to noise impacts to marine mammals if such animals are observed in proximity to the site construction works in the River Clyde are to be suspended until they have moved away

6. Deposits and/or Removals

(a) **Permanent** substance(s) or object(s) to be deposited and/or removed from below MHWS (continue on a separate sheet if necessary):

Type of Deposit/Removal	Deposits		Removals	
	Description	Quantity & Dimensions (metric)	Description	Quantity & Dimensions (metric)
Steel/Iron		No.		No.
		Dimensions		Dimensions
		Weight (kg/tonnes)		Weight (kg/tonnes)
Timber		No.		No.
		Dimensions		Dimensions
		Weight (kg/tonnes)		Weight (kg/tonnes)
Concrete		No.		No.
		Dimensions		Dimensions
		Weight (kg/tonnes)		Weight (kg/tonnes)
Plastic/Synthetic	Reactive Core Mat / SKAPS Geocomposite	1348 m ²		m ²
Clay (< 0.004 mm)		Volume (m ³)		Volume (m ³)
		Weight (kg/tonnes)		Weight (kg/tonnes)
Silt (0.004 ≤ Silt < 0.063 mm)		Volume (m ³)		Volume (m ³)
		Weight (kg/tonnes)		Weight (kg/tonnes)
Sand (0.063 ≤ Sand < 2.0 mm)		Volume (m ³)	Potential to remove up to 10m ³ of impacted sand / material, if encountered during installation works	10 Volume (m ³)
		Weight (kg/tonnes)		Weight (kg/tonnes)
Gravel (2.00 ≤ Gravel < 64.0 mm)	60mm x 40mm aggregate filter material	50.55 Volume (m ³)		Volume (m ³)
		Weight (kg/tonnes)		Weight (kg/tonnes)
Cobbles (64.0 ≤ Cobbles < 256.0 mm)	300mm x 200mm stone armour	202 Volume (m ³)	Potential to remove up to 20m ³ of impacted stone armour following visual inspection	20 Volume (m ³)
		Weight (kg/tonnes)		Weight (kg/tonnes)
Boulders (≥ 256.0 mm)		Volume (m ³)		Volume (m ³)
		Weight (kg/tonnes)		Weight (kg/tonnes)

Pipe		Length (m)		Length (m)
		External Diameter (cm/m)		External Diameter (cm/m)
Other (please describe below):				

(b) Method of delivery of substance(s) or object(s):

Delivery to site by road freight (lorry) - delivery to installation area using long reach excavator and other site plant.

(c) For work involving salt marsh feeding, beach replenishment or land reclamation please provide the following information relating to the substance(s) or object(s) to be deposited:

Quantity (tonnes):

n/a tonnes

Nature of substance(s) or object(s) (e.g. sand, silt, gravel etc.):

n/a

Source (if sea dredged state location of origin)

n/a

Particle size:

n/a

**Have the substance(s) or object(s) been chemically analysed?
If YES, please include the analysis data with your application**

YES NO

(d) **Temporary** substance(s) or object(s) to be deposited below MHWS (continue on a separate sheet if necessary):

Type of Deposit	Description	Quantity & Dimensions (metric)
Steel/Iron		No.
		Dimensions
		Weight (kg/tonnes)
Timber		No.
		Dimensions
		Weight (kg/tonnes)

Concrete		No.
		Dimensions
		Weight (kg/tonnes)
Plastic/Synthetic		m ²
Clay (< 0.004 mm)		Volume (m ³)
		Weight (kg/tonnes)
Silt (0.004 ≤ Silt < 0.063 mm)		Volume (m ³)
		Weight (kg/tonnes)
Sand (0.063 ≤ Sand < 2.0 mm)		Volume (m ³)
		Weight (kg/tonnes)
Gravel (2.00 ≤ Gravel < 64.0 mm)		Volume (m ³)
		Weight (kg/tonnes)
Cobbles (64.0 ≤ Cobbles < 256.0 mm)		Volume (m ³)
		Weight (kg/tonnes)
Boulders (≥ 256.0 mm)		Volume (m ³)
		Weight (kg/tonnes)
Pipe		Length (m)
		External Diameter (cm/m)
Other (please describe below):		

7. Disposal of Dredged Substance(s) or Object(s) at Sea

(a) Do you intend to apply for a marine licence for sea disposal of dredged substance(s) or object(s) as part of the project?

YES NO

If **YES**, please specify nature of substance(s) or object(s) (e.g sand, gravel, silt, clay, rock etc.):

n/a

(b) Quantity of substance(s) or object(s) (wet tonnes):

n/a	wet tonnes
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A separate marine licence application will be required to be submitted for sea disposal.

8. Noise Monitoring

Will loud, low to mid frequency (10Hz to 10kHz) impulsive noise be produced by the project? YES NO

If **YES**, which please indicate the noise generating activities and sound frequencies:

Noise Generating Activity	Sound Frequency (Hertz)
Use of Explosives	
Use of Accoustic Deterrent Devices	
Piling	
Other (please describe below):	

If you have ticked **YES**, please complete the Noise Registry – Initial Registration form located at: <http://www.scotland.gov.uk/Topics/marine/science/MSInteractive/Themes/noise-reduction>

Marine licence applications will not be accepted until this form has been completed and submitted.

9. Statutory Consenting Powers

Do you, or (if appropriate) your client, have statutory powers to consent any aspect of this project?

No

10. Scotland’s National Marine Plan

Have you considered the application with reference to Scotland's National Marine Plan? YES NO

If **YES**, provide details of considerations made with reference to the policies, including but not limited to General Policies 7 and 13 (GEN 7 and GEN 13), that have been considered:

<p>GEN 7 Landscape/seascape: The OBB has been designed so that upon completion, any visual impacts will be kept to a minimum. The only visible materials will be the rock armour which will be reused from current where possible, or replaced with materials of similar visual appearance. Watching briefs will be undertaken prior to and during the works to minimise impact on the redshanks of the Inner Clyde Special Protection Area</p> <p>GEN 8 Coastal process and flooding: The OBB has been designed so that it will have no adverse impacts on coastal processes or contribute to coastal flooding.</p> <p>GEN 9 Natural heritage: A Habitats Regulations Appraisal has been carried out and works have been programmed so as to have minimal effect on identified habitats and species such as the Inner Clyde SPA, Ramsar site, and Redshanks.</p> <p>GEN 11 Marine litter: All litter and waste materials generated during the works will be stored on site in appropriate containers (skips / drums / bins, and will be disposed of from site under duty of care to licensed waste disposal or treatment facilities.</p> <p>GEN 12 Water quality and resource: The OBB has been designed exclusively in order to provide betterment for the quality of the waters adjacent to the site.</p> <p>GEN 13 Noise: See responses to GEN 7 and GEN 9 above.</p> <p>GEN 18 Engagement: Applicant has already made contact with SNH and SEPA as a form of pre-statutory consultation engagement</p>

If **NO**, please provide an explanation of why you haven't considered the National Marine Plan?

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11. Pre-Application Consultation

Is the application subject to pre-application consultation, under The Marine Licensing (Pre-application Consultation) (Scotland) Regulations 2013?

YES NO

If **YES**, please indicate the date of the public notice for the pre-application consultation event and the type of consultation event held (a copy of the public notice must be supplied with this application):

Event Type	Date

12. Consultation

List all bodies you have consulted and provide copies of correspondence:

SEPA and Marine Scotland - Telephone conversations between landowner / applicant (ExxonMobil) and statutory bodies.

SNH - Site meeting held 03/07/19 - please see attached email summary

13. Environmental Assessment

(a) Does the project fall under Annex I or II of the EIA Directive?

Annex I Annex II Neither

If **ANNEX I** or **ANNEX II**, please provide the screening opinion issued to you in relation to the project.

(b) Has an EIA been undertaken:

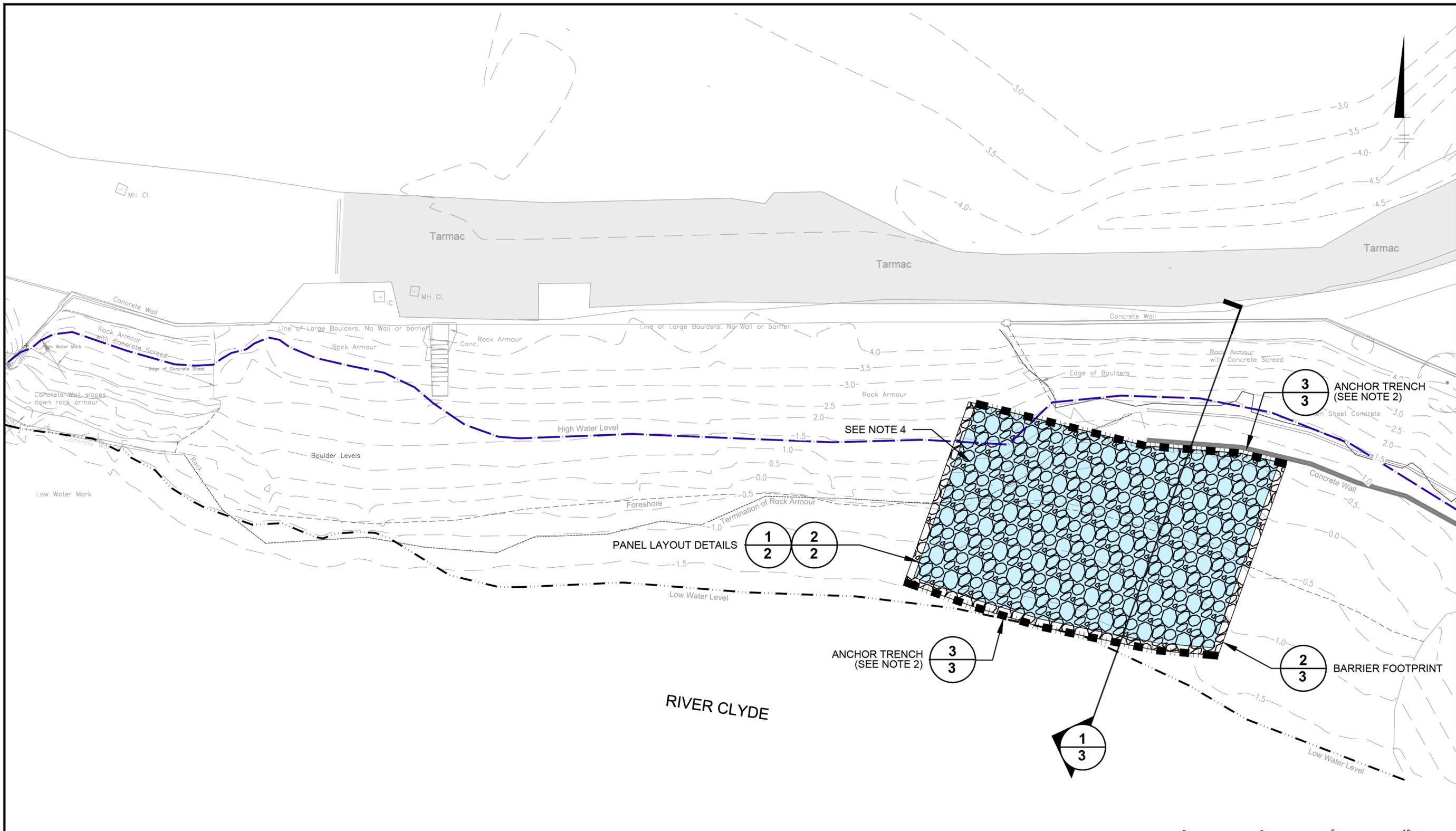
for the marine licence application to which this application relates
for any other EIA regulator (e.g local authority)

YES NO
YES NO

14. Associated Works

Provide details of other related marine projects, including reference/licence numbers (if applicable):

PROJECTNAME: ---
 CITY: SAN RAFAEL, CA
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LEGEND:

- 2.0 --- ELEVATION CONTOUR (METERS AOD)
- --- APPARENT HIGH WATER LEVEL
- --- APPARENT LOW WATER LEVEL
- --- FORESHORE BOUNDARY
- AOD ABOVE ORDINANCE DATUM
- REACTIVE CORE MAT AND GEOCOMPOSITE FOOTPRINT
- FILTER LAYER AND ARMOUR FOOTPRINT
- ANCHOR TRENCH

NOTES:

1. APPARENT HIGH AND LOW WATER LEVELS ARE BASED ON VISUAL OBSERVATION.
2. ANCHOR TRENCH WILL BE CONSTRUCTED ALONG BASE OF CONCRETE WALL FEATURE, EXTENDING FROM TERMINATION OF WALL IN DIRECTION PARALLEL TO FORESHORE EDGE.
3. RIP RAP AND SAND COVER MATERIALS WILL EXTEND 0.5M BEYOND REACTIVE CORE MAT AND GEOCOMPOSITE FOOTPRINT.
4. SOIL UNDERLYING ROCK ARMOUR IN NORTHWEST CORNER OF BARRIER FOOTPRINT MAY BE IMPACTED BY HYDROCARBON. IF HYDROCARBON IMPACTS ARE OBSERVED DURING CONSTRUCTION ACTIVITIES, BARRIER FOOTPRINT MAY BE ADJUSTED BASED ON CONDITIONS OBSERVED IN FIELD.



SOURCE: WSP

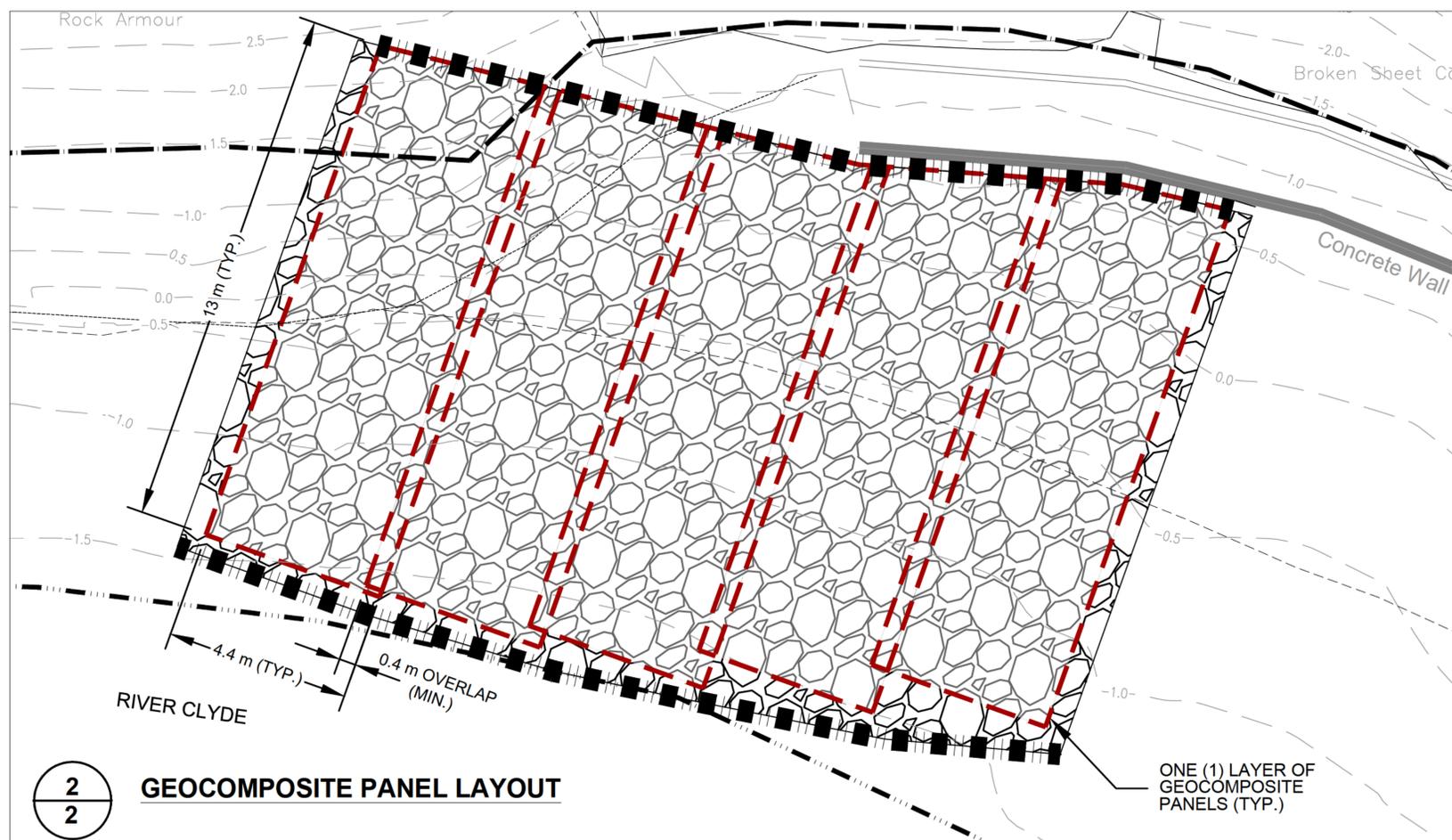
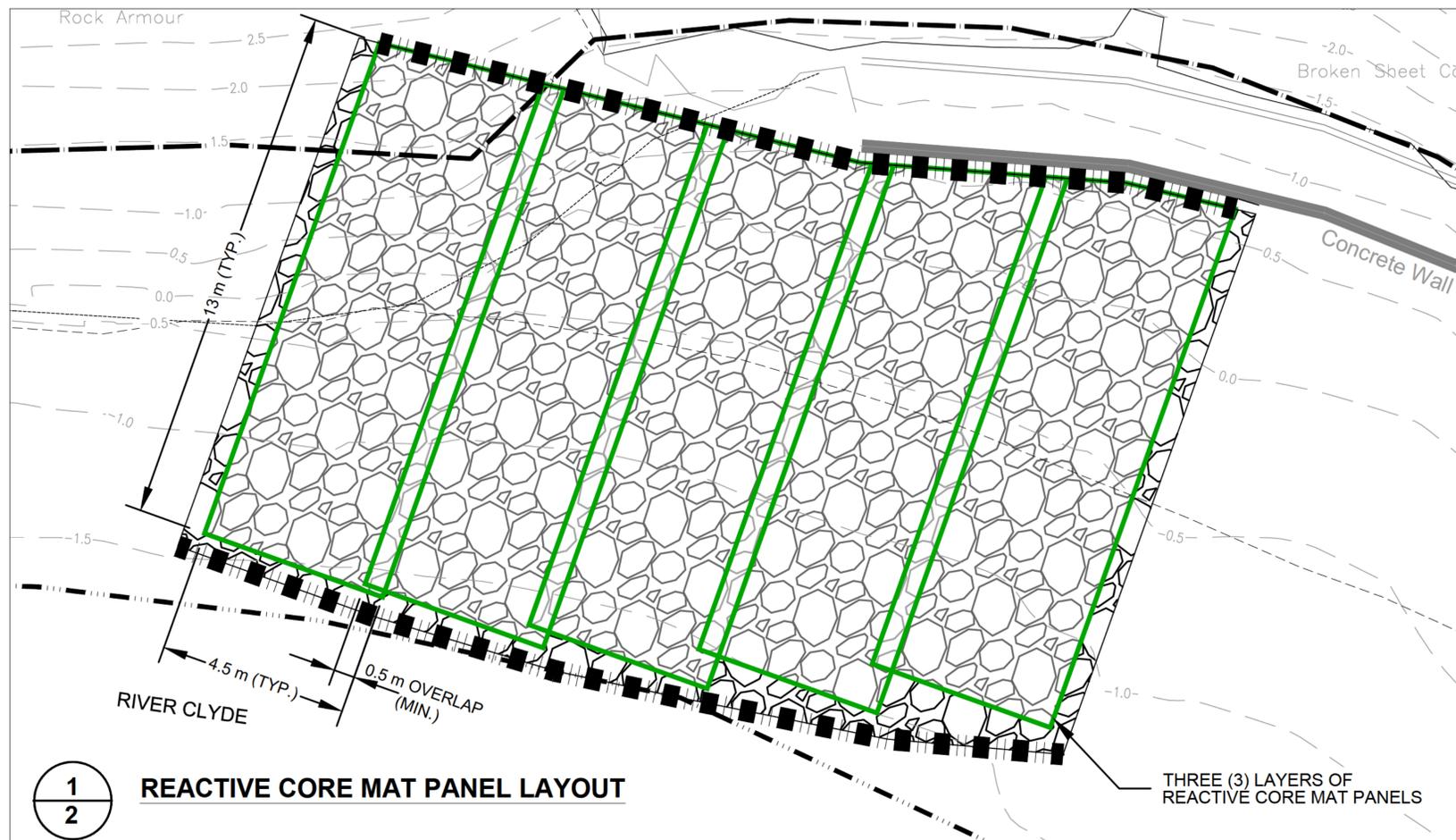
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 FORMER ESSO TERMINAL
 BOWLING, UK

BARRIER FOOTPRINT

ARCADIS | Design & Consultancy for natural and built assets

FIGURE 1a

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- LEGEND:
- 2.0 ELEVATION CONTOUR (METERS)
 - APPARENT HIGH WATER LEVEL
 - APPARENT LOW WATER LEVEL
 - FORESHORE BOUNDARY
 - FILTER LAYER AND ARMOUR FOOTPRINT
 - ANCHOR TRENCH
 - REACTIVE CORE MAT PANEL
 - GEOCOMPPOSITE PANEL

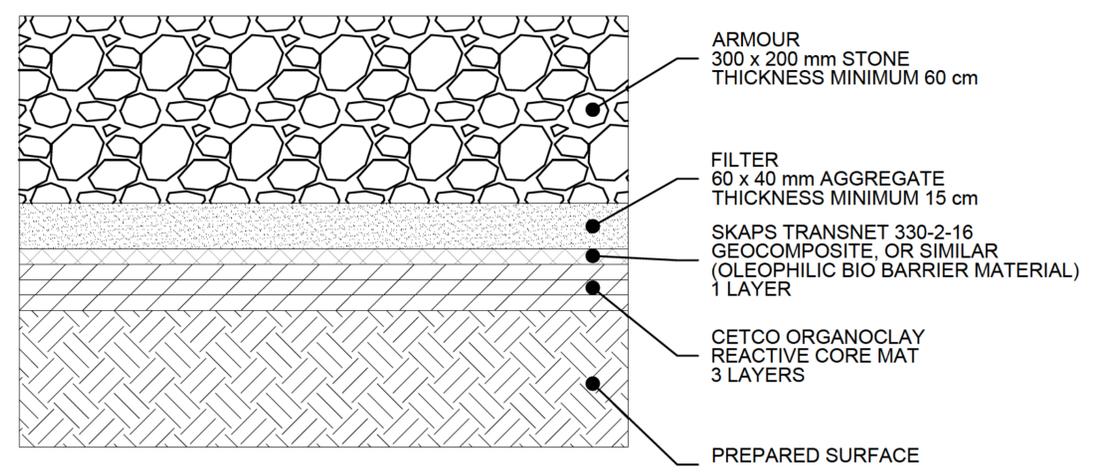
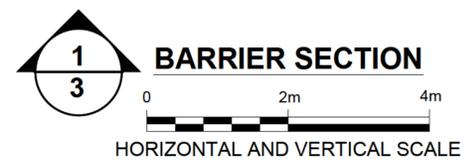
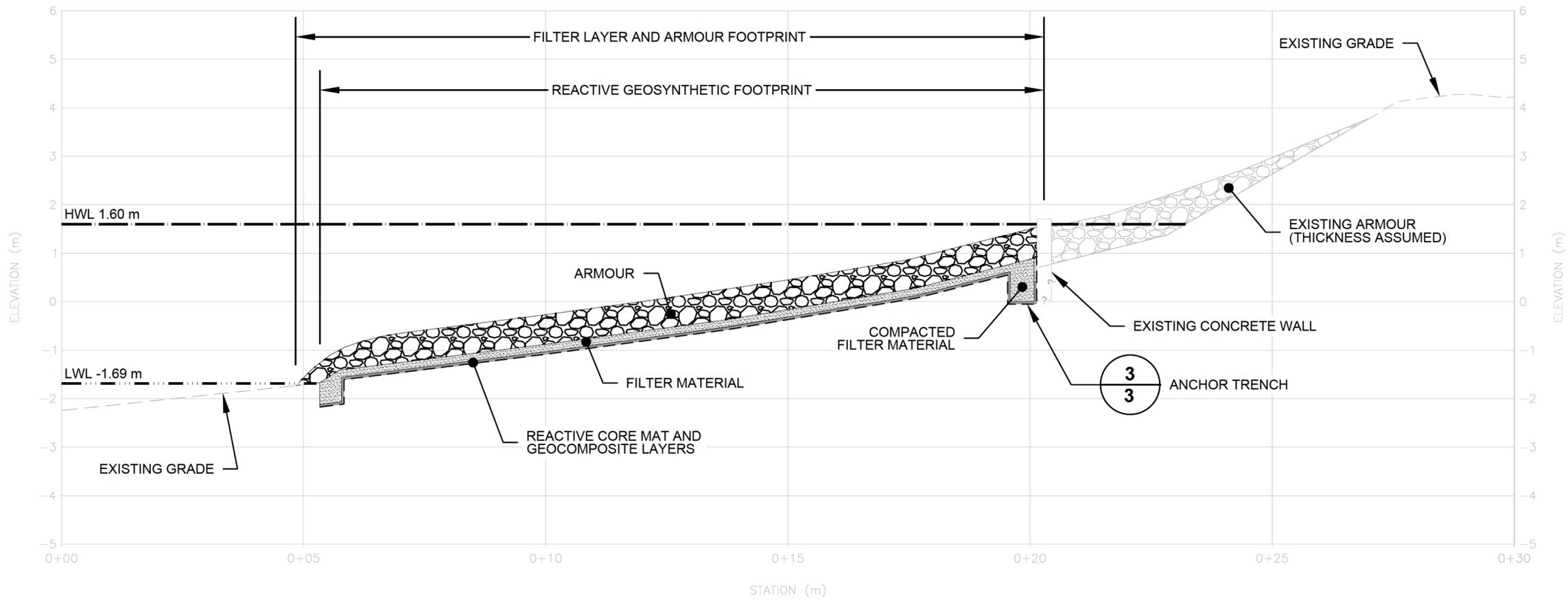


SOURCE: WSP

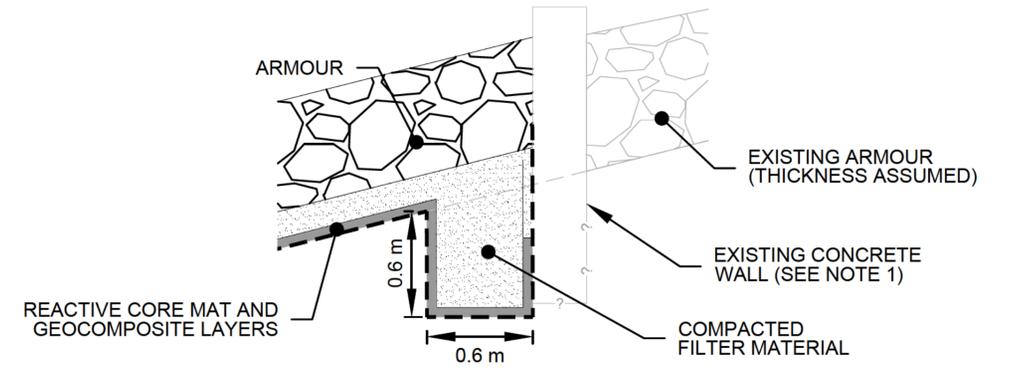
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PANEL LAYOUT

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2/3 TYPICAL LAYERING
 NOT TO SCALE



3/3 ANCHOR TRENCH DETAIL
 0 1m 2m

NOTE:
 1. CONTRACTOR SHALL EVALUATE STABILITY OF WALL BASED ON FIELD CONDITIONS. IF WALL IS DETERMINED TO BE UNSTABLE, WALL SHALL BE REMOVED.

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 BOWLING, UK

BARRIER SECTION AND DETAILS

ARCADIS Design & Consultancy
 for natural and built assets

FIGURE
3



From: Shelagh MacMillan [<mailto:Shelagh.MacMillan@nature.scot>]

Sent: 08 November 2018 19:22

To: Greaves, Tim <tim.greaves@exxonmobil.com>

Subject: Exxon site, Bowling - Timing of Piling work

Hi Tim

I mentioned that I'd get back to you separately about our thoughts on piling work within the period when redshank are overwintering in the Inner Clyde SPA. I noted that you mentioned the proposal is to install piling using vibratory methods and the substrate is soft mud, so the work should be less noisy than some other forms of piling. You could also start the work nearest to the basin first, as survey work (Applied Ecology, July 2017) has shown that the redshank use this area, so if you were still working when the redshank were present you would be further from them.

The easiest way to mitigate impacts on the SPA from this type of work, particularly where screening would be impractical to use between the works and the SPA, is to undertake the works when the redshank are not using the site. This is generally from May-August (inclusive). However, you have asked if there is any scope to work into the wintering period at the end of next year. While I would encourage you to plan for finishing this work by the end of August, if you went over this by a few weeks it would not be a major issue, but the more you enter into the wintering period the more impact you are likely to have on the redshank. As day-length gets shorter, and redshank spend much of the daylight hours foraging, disturbance during this time will increase energy expenditure and will reduce their feeding time, which has an impact on their survival. I would also ask that any need to extend works a 'few weeks' past August does not extend past mid-October, but please try to start works so you can finish the piling before the end of August.

Regards

Shelagh

Shelagh Macmillan | Operations Officer – Strathclyde & Ayrshire

Scottish Natural Heritage | Cadzow Court | 3 Wellhall Road | Hamilton | ML3 9BG | t: 01698 421668
Dualchas Nàdair na h-Alba | Cùirt Cadzow | 3 Rathad Wellhall | Hamilton | ML3 9BG
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Please note that my email address has changed to Shelagh.Macmillan@nature.scot

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MEETING NOTES

DATE	27 November 2018
VENUE	Site Meeting and walkover 10:00 – 13:00
MEETING TITLE	Bowling Remediation, Former Bowling Terminal.
CONTRACT NO	70032892
PURPOSE	Bowling – Stakeholder visit - to discuss upcoming remediation, and potential addition of a permanent sheet pile wall.
ATTENDEES	Pamela Clifford – WDC Development Control (By phone for summary at end of meeting) Shelagh Macmillan – SNH operations officer Dave Lang - SNH Tim Greaves – Esso Nigel Snedker – WSP Remediation designer Greg Chamberlain – WSP Ecologist
APOLOGIES	Bernard Darroch was unable to join due personal reasons. Malcolm Rose, Marine Scotland, Licensing casework manager sent his apologies – feedback provided to TG.

<i>Agenda Item No.</i>	<i>Matters Arising</i>	<i>Action</i>
1	Introductions & safety TG introduced the safety requirements on site after inductions by WSP. Confirmed the objectives of the meeting were to provide an overview of works and mitigations planned to ensure no adverse effect confirmation on integrity of the ecologically designated sites.	
2	Proposed works Esso Team provided a summary of the works, discussed: <ul style="list-style-type: none"> ➤ remediation process and temporary piling works (<i>piling works inside the site to stop excavations collapsing</i>) which remains unchanged under the current planning application submitted Jan 2019; and, ➤ a proposed amendment to the planning application, with works to change design to a permanent pile wall on the Southern boundary on part of CFD. 	
	PPE was issued for the site walkover Site walkover to put the works into context, extent of new CFD piled River wall, otter resting sites, minor repair works and surface water outfall locations. Noted emergency boat access point on WFD.	

	<p>SNH asked about a construction of the visual disturbance fencing itself and access to foreshore by workers through gaps in the fence</p> <ul style="list-style-type: none"> ➤ Visual disturbance fencing to be constructed at beginning of works along the whole of the site with buffer left 50m from Milton Island. ➤ Confirmed that access to the foreshore would be for minor works that would be short term. 	
	<p>Agreed actions confirmed as follows: -</p> <ol style="list-style-type: none"> 1. Largest concern is timing and delay of the works for both SNH and Esso. If programme slips, no-one wants the new CFD River wall installation works to slip beyond mid October. Agreed to expedite planning requirements quickly to enable modified existing planning application to progress smoothly. 2. Visual disturbance fencing to be constructed outside redshank wintering season (Mid-April to Mid Sept). 3. HRA to be amended and issued ASAP to include: <ol style="list-style-type: none"> a. All mitigation amendments for the permanent piled wall. b. Re-written stage 2 assessments for new legislation based on 'no adverse effects' post mitigation. No longer 'significant effects' and replace with no 'adverse effects'. c. Add 150m contour to drawing for redshank disturbance zone. Change in advice June 2018. 4. Mitigation measures identified within the HRA to be incorporated into the OCEMP 5. OCEMP to be amended and issued ASAP to include: <ol style="list-style-type: none"> a. Reflect all measures from the HRA & Otter Survey Report into the OCEMP. b. For marine mammal observations in respect of the new CFD piled wall – SNH confirmed this role can be undertaken by an ECOW with appreciation of marine mammals. Non- percussive rigs included in documents. c. Ecological clerk of works in respect of redshanks / other nationally important wildfowl to be on site during the short term minor repair to rock armour, fencing and outfall works to advise when works can take place (i.e. redshanks / wildfowl not showing signs of disturbance, can easily relocate, or have moved off or are not present. d. Resting sites for otters. <ol style="list-style-type: none"> i. New survey for natal holts prior to works already included in documents ii. European protected species licence will be required for working within 30m of resting sites with works that have the potential to cause disturbance. Licence to be taken by WSP. Not critical to have in place before planning permission approval – sufficient to be included as 'will be obtained' within the OCEMP. 6 weeks to turn around by SNH. 	<p style="text-align: right;">All</p> <p style="text-align: right;">b - WSP GC action / Esso</p> <p style="text-align: right;">c - WSP NT action / Esso</p> <p style="text-align: right;">d - WSP NT action / Esso</p> <p style="text-align: right;">a - WSP NT action / Esso</p> <p style="text-align: right;">b - WSP NT action / Esso</p> <p style="text-align: right;">c - WSP NT action / Esso</p> <p style="text-align: right;">d(ii) - WSP GC action / Esso</p>

	<p>e. Bat roosting sites – already included ECOW in documents to check for bat roosts in trees within 30m of works.</p>	
	<p>Round robin summary by phone with WDC Planning Lead Pamela Clifford (PC). NS summarised the field walkover and conclusions that were drawn, and amendments needed, SM & DL summarised for SNH, and PC summarised what WDC planning would require and reminded team that Bernard Darroch to be in all communications as Case Officer, include PC as senior contact:</p> <ul style="list-style-type: none"> a. SNH principal concern is on timing for process for planning to be completed (i.e. allow works in summer months rather than affecting wintering redshanks). b. SNH / Esso / WDC aligned on requirements to be placed in documents c. Initial e mail to planning showing modified planning proposals (where and what for permanent piling), changes and list of documents (i.e. request permanent piling be formally included as part of the works). Show ownership change (Esso acquisition of sliver of land to enable new CFD piled river wall) on boundary plans for . Note new owners' details and correspondence completed. Final documents to be completed ASAP. d. PC confirmed that WDC planning see no residual 'ecological / environmental' issues: <ul style="list-style-type: none"> i. need confirmation of alignment with Marine Scotland, ii. if all steps completed quickly and document submitted as soon as possible, then amended application could achieve committee in February 2019. <p>PC confirmed that though the change to new CFD River wall poses no concern, there are still two objections that require resolution:</p> <ul style="list-style-type: none"> a. SEPA flood objection to be removed. WSP awaiting SEPA response. WSP to send new piling drawings to SEPA flood dept and copied to PC & BD. b. NS queried airport requirement for a bird management plan for developments in the safeguarding circular with WDC. Although WSP were previously advised this does not require intervention – PC advised NS to send objection response regarding the lack of development types in the planning application ASAP, direct to the airport contact and copied to PC & BD. 	<p>c - WSP NT action / Esso</p> <p>d (i)- WSP NS action / Esso</p> <p>d (ii)- WSP NT action / Esso</p> <p>a - WSP NS action / Esso</p> <p>b - WSP NS action / Esso</p>
	<p>Although Marine Scotland were unable to attend, they kindly advised Esso by email. Summary notes of the contact so far:</p> <p>Discussion of the works, and preliminary plans suggests no EIA would be required under The Marine Works EIA (Scotland) Regulations 2017 (specifically for works below low tide under different regulations), however this discussion needs formal resolution, and to close Marine Scotland advise :</p> <ul style="list-style-type: none"> a. The new wall could be considered an EIA under schedule 2, 10(m) of The Marine Works EIA (Scotland) Regulations 2017 and you should submit a screening request to obtain formal advice from Marine Scotland on this. 	<p>a - WSP NS action / Esso</p>

<i>Agenda Item No.</i>	<i>Matters Arising</i>	<i>Action</i>
	<ul style="list-style-type: none"> b. the total surface area of these works fall under [sic. below] the 1000m2 threshold, and as such would not be considered a prescribed class of activity under the Pre-application consultation regulations c. timelines would be sped up if Esso submitted a marine licence application along with your screening request 	c - WSP NS action / Esso
	Teleconference to confirm dispatch of documents on Friday 30 Nov WSP ESSO WDC SNH MS	WSP NT action
	Internal Notes for WSP: NT to pass GC latest information on remedial strategy, piled drawings, HRA and OCEMP & GC to propose works for European protected species licence to Esso.	WSP GC & NT action
3	AOB	
	None	

DISTRIBUTION: Attendees, Esso (TG & JBB), WSP (NT, NS, RL DJ,JW), SNH (SM & DL), WDC Planning (PC & BD) & Marine Scotland (MR)

Copies to: Project file

Pickett, Thomas

From: Dave Lang [<mailto:Dave.Lang@nature.scot>]
Sent: 05 July 2019 11:16
To: Greaves, Tim <tim.greaves@exxonmobil.com>
Cc: Barber-Brown, Jonathan /C <jonathan.barber-brown@exxonmobil.com>; Hadwen, James P <james.p.hadwen@exxonmobil.com>
Subject: RE: Bowling - SNH meeting - Area near Dunglass Castle

Thanks Tim.

That's an excellent summary of what we discussed/agreed the other day.

Thank you for the otter survey data.

All being well I guess the next thing for us in relation to the project will be the consultation from Marine Scotland over the licence application for the installation of the bio-barrier.

Will speak soon.

Dave Lang | Operations Officer

Scottish Natural Heritage | Caspian House | Mariner Court | Clydebank Business Park | Clydebank | G81 2NR | t: 0131 314 6761
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From: Greaves, Tim [<mailto:tim.greaves@exxonmobil.com>]
Sent: 04 July 2019 15:15
To: Dave Lang
Cc: Barber-Brown, Jonathan /C; Hadwen, James P
Subject: Bowling - SNH meeting - Area near Dunglass Castle

Dave,

Thanks for your time yesterday at Bowling – good to reconnect and validate where we are going on the projects.

As discussed, one part of our project is a new (second) Marine Scotland application for the installation of a Bio-barrier on the foreshore. As you saw, the installation area is between the high and low water line near to Dunglass Castle, and whilst we aim to complete installation in the summer, there is a chance we could drift on.

The Applied Ecology team who have been supporting the ecology efforts (including main recent bird counts) on site yesterday confirmed:

- they did not recollect seeing any Redshank in the area we plan this piece of the work,
- we are 'near' (just outside 30m radius) of an Otter lay-up and a recent survey confirms some use.

From our meeting, my understanding was that:

- As the mudflats on the southern bank of the Clyde are ~300m away from the work area, SNH don't consider the redshank there would be disturbed
- If the recollections are correct and data demonstrates the Redshank are not within 150m of these works, then the project can continue at any time through the year.
 - o I've attached a plot of where approximately this work will be – shows
 - The distance to south side of the Clyde;
 - an extract of the applied ecology otter location (I've dropped in a ~30m radius line); and,
 - an extract of the applied ecology Red shank counts (I've dropped in a ~150m radius line).

- Understand principal concern is red shank, need to check other bird data in case other big populations impacted
 - o There were recordings of other birds nearer the work area, obviously full data in the application

As such our discussion confirmed that the MS License application should include the following content.

- Notes summarising our meeting, to show MS that consultation has already happened.
- As work is in the SPA boundary,
 - o Bird count data / a summary thereof to show Redshank are not impacted by this application – principally this is not feeding ground as so rocky
 - o Confirm location to show where the main red shank 'loafing' area was (in the basin +150m away)
 - o If red shank were / become present in scientifically significant amounts within 150m that could be disturbed by these works, and the works continue beyond early September, then confirmation we'd appoint an ECOW
- As work is close to an Otter layup
 - o Include the relevant survey done within the application
 - o Confirm that we will apply for an Otter license, and it is acceptable we apply for it at the same time as the MS application goes in (though we should note it is being started)
 - o Perform a check on the Otter lay-up before works to minimise disruption
- Summary descriptions of the other mitigations we'd discussed, and agreed we could put in place in line with such typical projects such as:
 - o Screening parts of the sea wall (visual barrier) where machinery maybe parked / materials will be lain down
 - o Soft start of machinery and gradual build up of noise
 - o Keeping noise as constant as possible (minimising sporadic noise)
 - o Aim to use 'quiet' equipment / deploy noise baffles to minimise noise being generated by plant

Hope I have interpreted everything correctly, and thanks again for your time.

Regards

Tim Greaves

Environmental & Property Solutions, Esso Petroleum Company Limited, Avonmouth Fuels Terminal, St. Andrews Road, Avonmouth, Bristol, BS11 9BN

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Thoiribh an aire airson adhbharan gnothaich, 's dòcha gun tèid sùil a chumail air puist-dealain a' tighinn a-steach agus a' dol a-mach bho SNH.

[Redacted]

Intended as brief overview. Further details can be found in source reports. Ecological surveys

GENERAL INFO TO AID DISCUSSION

[Redacted]

Intended as brief overview. Further details can be found in source reports. Ecological surveys

GENERAL INFO TO AID DISCUSSION

[Redacted]

Intended as brief overview. Further details can be found in source reports. Ecological surveys

GENERAL INFO TO AID DISCUSSION



Exxon Site, Bowling

Over-Wintering Bird Surveys

Produced for Peter Brett Associates LLP

By Applied Ecology Ltd

July 2017

Document Control:

Version	Date	Version Details	Prepared by	Checked by	Approved by
1.0	3 July 2017	Final draft – for comment	RAH	KD	RAH
2.0	26 July 2017	Final - issue	RAH	KD	RAH

Prepared for: Peter Brett Associates LLP
Title: Exxon Site, Bowling: Over-Wintering Bird Surveys
Project number: AELSC0148
Document version: v2.0
Document status: Final
Document date: 26 July 2017

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1 Introduction

Background

- 1.1 In June 2016, Applied Ecology Ltd (AEL) undertook a Preliminary Ecological Appraisal (PEA) of land at the former Exxon site in Bowling, in West Dunbartonshire (“the Site”, as shown in **Figure 1.1**), to inform proposals for its redevelopment. The conclusions of the PEA (see AEL, 2016) included a number of recommendations for further survey to address potential ecological constraints associated with the Site. One such constraint was the adjacent Inner Clyde Special Protection Area (SPA), and the potential therefore for any development on the Site to directly or indirectly affect the qualifying features of the SPA. To that end, survey data were required to support a Habitats Regulations Appraisal (HRA) and Environmental Impact Assessment (EIA) of redevelopment proposals for the Site. Following further discussion with SNH regarding the scope of that work, supporting over-wintering bird surveys were commissioned in September 2016.

Purpose of this report

- 1.2 This report provides details relating to over-wintering bird surveys undertaken for a section of the Inner Clyde SPA immediately adjacent to the Site, between September 2016 and April 2017 inclusive. It includes a description of methodologies adopted, a summary of results, and a discussion of the results in the context of proposals for the Site.
- 1.3 These data will subsequently be used to support the HRA for the proposed scheme, and also to inform the Environmental Statement (ES) for any such works.

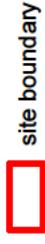
Report qualification

- 1.4 The surveys described here were undertaken in accordance with the best practice methodologies current at the time of commissioning. Site circumstances, scientific knowledge or methodological requirements can change during the course of a project, and these external factors may impact on the scope of subsequent work requirements.
- 1.5 All survey work and reporting was undertaken by experienced and qualified ecologists in accordance with the Code of Professional Conduct of the Chartered Institute of Ecology and Environmental Management (CIEEM) and BS 42020:2013 (Biodiversity).
- 1.6 All ecological surveys have an expected validity period, owing to the tendency of the natural environment to change over time. This validity period varies from receptor to receptor, and is also dependent on the degree of change in a site's management and overall landscape ecology. Where the potential for change is considered to be relevant to the Site, this is highlighted in the appropriate section.
- 1.7 This report does not purport to provide detailed, specialist legal advice. Where legislation is referenced, the reader should consult the original legal text, and/or the advice of a qualified environmental lawyer.



The Former Exxon Site Over-Wintering SPA Birds

Site Location



site boundary

Figure 1.1

Map Scale @ A4: 1:15,000

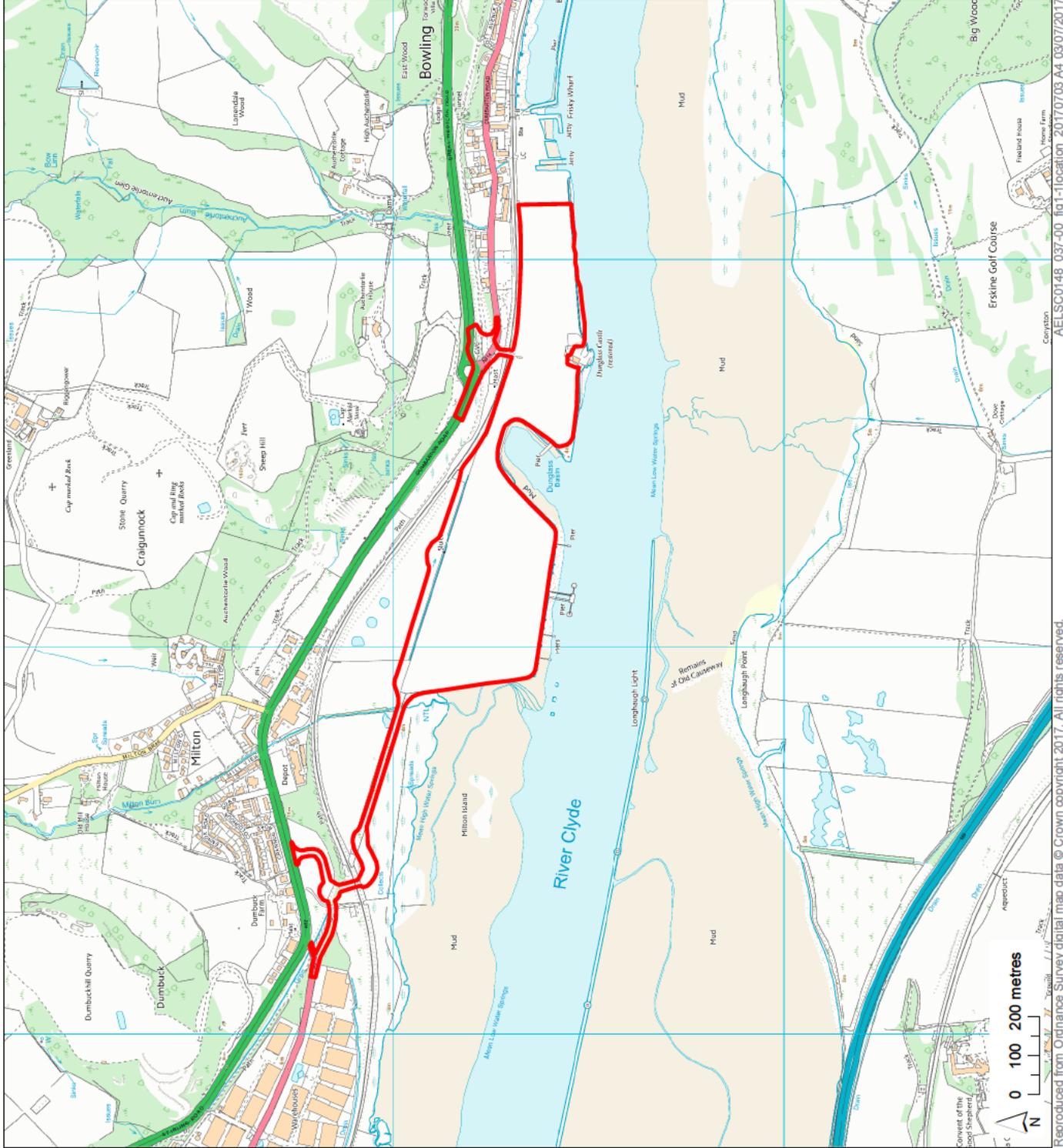
Surveyed by: AEL

Survey date: Sep 16 - Apr 17

Drawn by: RAH

Checked by: KD

Status: Final



2 The Inner Clyde SPA

Site description

- 2.1 The Inner Clyde SPA and Ramsar site was notified in March 2000, and its boundary is identical to that of the Inner Clyde Site of Special Scientific Interest (SSSI). The whole of the Inner Clyde Estuary is important for a range of wintering waterbirds, and the qualifying species for the European designation is redshank *Tringa tetanus*.
- 2.2 The Inner Clyde SPA covers 1826 ha, stretching from Newshot Island in the east, westwards to Newark Castle. It provides over-wintering habitat for around 1,740 redshank (Harding, 2008). This represents approximately 1.5 % of the Eastern Atlantic population of the species, and is one of the highest recorded densities of winter populations of redshank in the UK.
- 2.3 Redshank is a species that typically breeds in wet grassland and saltmarshes, but in winter it tends to be more coastal in its distribution and can be found almost anywhere that has suitable feeding habitat along the coast. The birds feed on intertidal macro-invertebrates, and therefore their preferential habitat is inter-tidal mud, and occasionally flooded grassland areas.
- 2.4 The Inner Clyde Ramsar site covers the mudflats and shoreline habitats also encompassed by the SSSI and SPA. The internationally important feature for which the Ramsar site was notified is also the over-wintering redshank population, and similarly so for the SSSI. As these features overlap with the qualifying feature of the SPA, the Ramsar site and SSSI do not need to be assessed separately from the SPA, and all parts of the following information should be taken as referring equally to the SPA, Ramsar site and SSSI if/when used to support a HRA.

Conservation objectives

- 2.5 The conservation objectives of the Inner Clyde SPA and Ramsar site are listed as:
 - (i) to avoid deterioration of the habitats of redshank or significant disturbance to redshank, thus ensuring that the integrity of the site is maintained; and
 - (ii) to ensure for redshank that the following are maintained in the long term:
 - population of redshank as a viable component of the site
 - distribution of redshank within the site
 - distribution and extent of habitats supporting redshank
 - structure, function and supporting processes of habitats supporting redshank
 - no significant disturbance of redshank.



Status of redshank in the wider SPA

- 2.6 Site Condition Monitoring (SCM) data for the Inner Clyde SPA are available from c. 10 years ago (Harding, 2008). That report states that, at that time, the redshank population was considered to be in favourable condition. This assessment was based on WeBS count data for 2002/03 to 2006/07, during which the mean peak of redshank within the SPA was 1740 (c. 1.5 % of the bio-geographic population). Although this represented a drop of from the 1992/93 to 1993/94 peak of 2107 birds, it was still in excess of the target level of 1 % of the UK population.
- 2.7 The required over-wintering habitat for redshank is mudflats. The 2007/2008 SCM report used a comparison of aerial photographs of the area to determine that there had been little change in the extent of the mudflat habitats in the Inner Clyde over the time period studied. The report concluded that there had been no significant loss of supporting habitat in the area (significant loss defined as being > 5 %) up to the date of that report.

The Inner Clyde SSSI

- 2.8 The Inner Clyde SSSI, although contiguous with the SPA, includes additional bird species on its citation as being reasons for its notification. These species are non-breeding (i.e. over-wintering) cormorant, eider, goldeneye, oystercatcher, red-breasted merganser and red-throated diver, in addition to the redshank described above for the SPA.



3 Methodology

Identifying the potential zone of disturbance

- 3.1 It is well documented that human presence can result in a drop in bird numbers at a site (Burton *et al.*, 2002). However, the quoted potential distances at which redshank are disturbed varies widely across the literature. A long-term study of the impacts of construction activities on waders and waterfowl within the intertidal habitats of Cardiff Bay was carried out by Burton *et al.* (2002). Part of the study focussed on the potential impacts of construction activity within the Bay on the feeding habitats of redshank. Birds using sections of shoreline adjacent to construction works were found to be potentially affected by such disturbance, although those over 200 m from the disturbance sources appeared to be unaffected.
- 3.2 An earlier study on the Forth Estuary (Bell, 1995) recorded redshank roosting within 50 m of a crushing plant, and that construction of high rise flats within 40 m of roosting redshank appeared to have no effect on their numbers. Similarly, redshank were not disturbed by sheet piling and foundation piling works 20 m from the shoreline. It was thought that the high quality of feeding habitat in the Granton area included in the study was one of the principal reasons why redshank remained feeding despite high levels of disturbance.
- 3.3 Research from the Dutch Wadden Sea and Delta area (summarised by Smit *et al.*, 1993) suggested that 200-300 m was the key distance within which redshank reacted to disturbance. This was determined from a number of Dutch studies incorporating a range of disturbance impacts. Smit *et al.* (*ibid.*) also noted that observations on Vlieland by Van Koersveld (1986) suggested that redshank reactions were stronger if sound was combined with visual disturbance.
- 3.4 The literature therefore suggests that the response of redshank to disturbance is variable and is likely to be dependent on a range of different factors including season, time of day, tidal state, habituation to previous disturbance, the reactions of other birds in the flock, availability of other habitat and feeding areas nearby, and the state of hunger of individual birds.
- 3.5 Irrespective of the volume, nature or duration of the disturbance, for the purpose of this assessment and using available literature and evidence, a 300 m study area was applied for the SPA sections around the Site.

Field survey

Study area

- 3.6 The study area was established to include all areas of the SPA within 300 m of the Site, as shown in **Figure 3.1**. This totalled 108.94 ha, of which 49.15 ha was land designated as SPA, and the remaining 59.79 ha was the main channel of the River Clyde which is not designated. The area of SPA within the study area represented 2.7 % of the total SPA area of 1826 ha.



- 3.7 Count point locations were selected to provide defined areas for bird counts according to the survey viewshed offered by each point. Originally, seven count points (CPs) were proposed, but CP2 transpired to be inaccessible, and the wide viewshed afforded by CP3 rendered it redundant. Therefore, six final CPs were used throughout the survey, as shown in **Figure 3.1**, referenced as CP1 and CP3-CP7.

Survey timings

- 3.8 Survey timings are detailed in **Appendix A**.
- 3.9 Surveys were undertaken each month from September 2016 through to April 2017 inclusive. Dates were selected so that during each month, each CP's viewshed was watched "through the tide", i.e. the whole (or majority) of the c. 12 hr tidal cycle occurring in daylight hours.
- 3.10 Within each hour section of the tidal cycle, there was a "settling" period at the CP location for 30 mins before counting for 30 mins.

Bird counts

- 3.11 Within each 30 mins count period, sea and shore birds were logged within the count point location's defined viewshed, whether on exposed mud or open water, and plotted on field maps of the study area. The species counted included all waders, wildfowl and gulls, as well as other species associated with wetland/coastal habitats such as heron, cormorant and grebes. Other species present in the survey area but not primarily associated with coastal habitats (e.g. corvids, passerines, and so on) were occasionally counted but were excluded from subsequent analyses. Birds flying through the survey area but not landing were also noted but not counted. Weather data and other observations such as sources of disturbance were recorded on summary sheets.

Data analysis

- 3.12 Field maps were scanned and the data digitised to ArcGIS to produce maps for each count period and each key species.
- 3.13 Other data manipulation was undertaken using Excel and Minitab.

Limitations to survey methods

- 3.14 In late April 2017, one survey visit was missed due to short-notice unavailability of a surveyor. This meant that one single-hour segment of the tidal cycle was missing from each CP for that month. Despite occasional issues throughout the whole 8 months of survey such as late entry onto the Site when the security guard was absent, surveys being curtailed due to very poor weather, and very short daylight hours in December, all other missed survey slots were replaced by equivalent tidal state slots later in the appropriate survey month. This meant that overall there was a sampling rate of 99.0 % of the tidal cycle across the whole study area, although this dropped to 91.7 % for April. Given these high sampling rates, it is not considered that the one survey day missed in April represented a significant limitation to the overall results. However, comparative results using the April data should take this into consideration.



- 3.15 Occasionally, the field surveyors had to move during the 30 mins count period. The most frequent location for this was at CP1, when unusually high tides tended to force the surveyor up to higher ground. Also, when the sun was positioned low in the sky and within the count point viewshed sightline, the surveyors needed to find a new position in order to get a clear view of the water. Surveyors also occasionally moved their position to check small sections of each count point area not necessarily visible from the vantage point, for example, the extreme eastern part of the study area at Frisky Wharf, and around the piers at CP4. On all occasions, the survey was completed successfully from the altered position(s).
- 3.16 When digitising the field data, it became clear that there was a level of surveyor bias within each count point area which resulted in surveyors avoiding the extreme edges of the count area when marking bird positions on the field maps. This spatial error is visible on the maps presented in **Section 4**. This was not unexpected as there were no physical boundaries delimiting the edges of the count area, and varying tidal states caused each count area to look different on each survey visit. However, all birds within the all count areas were recorded, even if their precise position at the edges of each survey area could not be accurately pinpointed. This spatial error did not therefore affect the total number of birds recorded.
- 3.17 The survey undertaken in 2017 covered only a small part of the overall SPA. Extrapolating wider trends from this sampling should therefore be undertaken with caution.



The Former Exxon Site Over-Wintering SPA Birds

SPA Count Areas

-  site boundary
-  count area
-  SPA
-  count point

Figure 3.1

Map Scale @ A4: 1:15,000

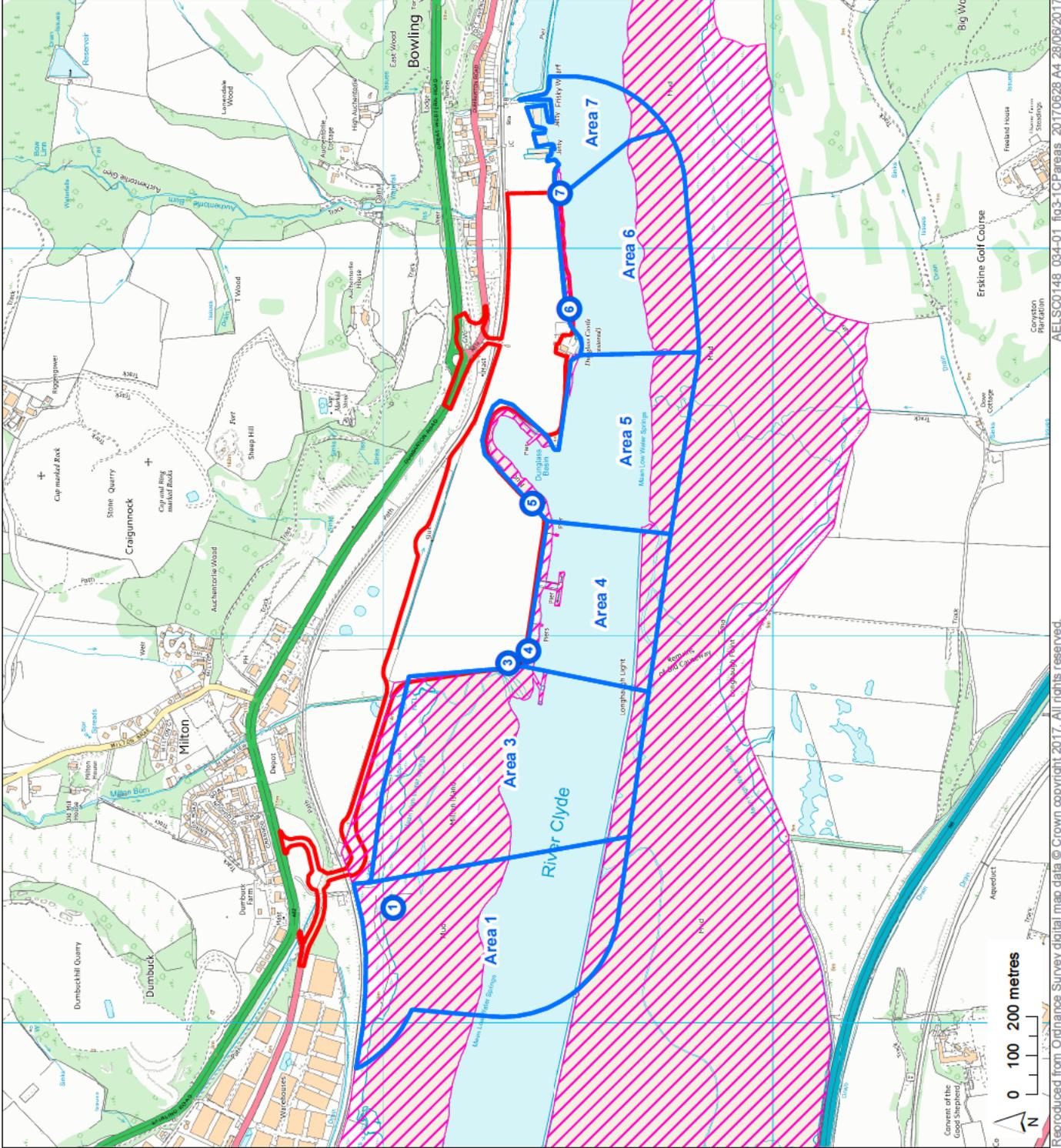
Surveyed by: AEL

Survey date: Sep 16 - Apr 17

Drawn by: RAH

Checked by: KD

Status: Final



4 Results

Summary

- 4.1 A summary of all the birds recorded throughout the survey period in each month of survey and over the survey period as a whole is provided in **Appendix B**. A total of 47 species associated with the Inner Clyde, its mudflats and immediate habitat was recorded, with the largest number of individuals over the whole survey period being of redshank.
- 4.2 A density “heatmap” of all species recorded in all months is provided in **Figure 4.1**. It shows that the key locations for birds during the entire recording period were within the Dunglass Basin in the centre of the Site, Milton Island to the west, and the southern shore of the River Clyde in the eastern part of the study area. There was also a localised “hotspot” of activity at Frisky Wharf at the extreme eastern end of the study area.
- 4.3 The monthly total number of birds recorded was highly variable, for all species, as well as for redshank.
- 4.4 With regards to the conservation status of the birds counted, just over three-quarters of all species recorded were either red- or amber-listed birds of conservation concern (BoCC; see Eaton *et al.*, 2015) (**Table 4.1**). In terms of number of individual birds counted, over 95 % were of species which were either red- or amber-listed (**Table 4.2**).

Table 4.1: Number of species recorded Sept 2016-April 2017 according to BoCC status.

BoCC status	Number of species	% of total
Red	7	14.9
Amber	27	57.4
Green	12	25.5
None	1	2.1
Total	48	100.0

Table 4.2: Number of birds recorded Sept 2016-April 2017 according to BoCC status.

BoCC status	Number of birds	% of total
Red	7531	14.6
Amber	42119	81.5
Green	1982	3.8
None	60	0.1
Total	51692	100.0



Redshank through-the-tide

- 4.5 A summary of the distribution of redshank throughout the study area during the entire survey period is provided in **Figure 4.2**, and “through-the-tide” in **Figure 4.3**.
- 4.6 The two key locations for redshank within the study area were within the Dunglass Basin and the south-eastern edge of the study area, including the end of the causeway on the southern shore of the River Clyde, opposite the mouth of the Dunglass Basin. In addition to these two key locations, there were pockets of higher usage by redshank at Frisky Wharf at the extreme eastern end of the study area and on the higher ground within Milton Island.
- 4.7 **Figure 4.3** seems to show that, unlike other parts of the Inner Clyde SPA (AEL, 2017), there was no distinct period within the tidal cycle when redshank were preferentially using the study area. This was confirmed via ANOVA which returned no significant effect of tidal state ($F = 0.92$, $P = 0.526$), and as illustrated in **Figure 4.4**. The peak number of redshank using Dunglass Basin occurred at low tide (L) and an hour after low tide (L+1), but it was also well-used by the birds in the hours before and after these times, throughout the tidal cycle.
- 4.8 It should be noted that the surveys covered a wide range of neap and spring tides. At high neap tide, exposed mud was still present within the study area, and hence some feeding birds remained. However, these events do not account for all of the redshank recorded at high tide.

Other SSSI species through-the-tide

- 4.9 Summary maps for other notified SSSI species throughout the tidal cycle can be found in **Figures 4.5-4.9**, namely for cormorant and eider, goldeneye, oystercatcher, red-breasted merganser and red-throated diver.
- 4.10 **Eider** were only recorded in the water in the south and west of the study area in the hour preceding high tide (L+5). **Cormorant** also tended to be recorded in the water, with slightly greater numbers being present during the higher tidal states (see **Figure 4.4**) although this was not statistically significant ($F = 0.96$, $P = 0.489$). The cormorants within the study area also had a strong preference for social grouping and wing drying around the navigation beacons along the southern edge of the study area, as well as lamp-posts and stanchions on the western corner of the mouth of the Dunglass Basin.
- 4.11 **Goldeneye** was one of the few species which generally appeared to avoid the Milton Island area, and also typically were not recorded in the immediate vicinity of the Site. Their numbers were slightly higher during the lower tidal states (see **Figure 4.4**) but again this was not statistically significant ($F = 0.91$, $P = 0.533$).
- 4.12 After redshank, **oystercatcher** was the most frequently recorded SSSI species, but unlike redshank, their numbers did appear to be linked with the tide, with statistically higher numbers of birds present in the study area during the higher tidal states (**Figure 4.4**) ($F = 3.46$, $P < 0.001$). The birds generally kept their distance from the Site itself, although they were recorded feeding at and around low tide in the Dunglass Basin.
- 4.13 Like goldeneye, **red-breasted merganser** was recorded sporadically throughout the whole tidal cycle. These birds were predominantly on the water.



- 4.14 A total of seven **red-throated diver** were recorded, between October and December inclusive. They were recorded on open water during both high and low tidal states.

Other red-listed species

- 4.15 A number of BoCC red-listed species, not listed on the SSSI citation, were recorded in significant number. Notably this included curlew, lapwing and herring gull (**Figures 4.10-4.12**).
- 4.16 **Curlew** showed a strong preference for the mudflats in the centre of Milton Island, and to a lesser extent the central and western sections of the southern shore of the River Clyde. Birds tended to be present in greater numbers during the higher tidal states (**Figure 4.4**), and this was found to be statistically significant ($F = 1.96, P < 0.05$).
- 4.17 **Lapwing** numbers, as with the oystercatchers, did appear to be linked to the tidal cycle, but in contrast to the oystercatchers they were more prevalent during the lower tidal states (**Figure 4.4**). Their preferential low tide feeding areas were on the southern shore of the River Clyde, at the eastern end of the study area. The lapwing had all but disappeared by February (**Appendix B**), presumably returning to non-estuarine breeding areas by this time.
- 4.18 The numbers of **herring gull** present in the study area were highly variable and showed no particular relationship with the tides (**Figure 4.4**). The birds had a slight preference for areas nearer to the Site, including locations within the Dunglass Basin and the piers and stanchions along the artificial seawall between the Basin and Milton Island. Numbers were highest between September and December, and then seemed to tail off.
- 4.19 Four other red-listed species were recorded, albeit in significantly lower numbers than those described above. Sixteen **black-tailed godwits** were recorded in September 2016 but were not seen again during the survey. This was presumed to be because they were in the process of moving south to other over-wintering grounds. Two **long-tailed ducks** were recorded in November 2016. This species is normally associated with deeper offshore waters although individual birds are sometimes recorded inland and on estuaries. Two **ringed plover** were recorded in April 2017; these may have been returning breeders as this species was later recorded on the Site during breeding bird surveys. Six **scaup** were seen in October 2016, and a single bird in November. This time of year is the main passage period for scaup (Wernham *et al* 2002).

Disturbance

- 4.20 A range of disturbance sources were noted by the surveyors. (see **Appendix C**). Those which resulted in the most displacement of birds were the wash created by fast-moving passing boats which flooded out birds roosting or feeding above the tide line, and wildfowling. The latter was a fairly regularly occurrence and in all instances caused birds to leave the study area. Birds reacted less to slower moving boats with lower wash levels, and in most instances returned to the area after the disturbance had ceased.
- 4.21 The shoreline at Bowling is not easily accessed by the general public, and therefore only a few instances of dog walkers were recorded. Low-flying helicopters did occasionally result in birds moving away from the area, as did hunting peregrine. Seals were regularly recorded in the study area, but did not always cause the birds to retreat. Very few of the



recorded disturbance originated from the Site. The surveyors tended to survey CPs 5 and 6 from within a vehicle, as it was noted during the pre-survey reconnaissance visits that the physical presence of the surveyor on the bank at these locations was presenting a disturbance influence to the birds which was not always resolved by a 30 mins settling period.

- 4.22 Predatory mammals were present on the Site. Foxes were seen regularly, even during the day, and their tracks indicated that they were accessing the mud flats at CP1. Otter and stoat were also recorded on the Site but there were no observed instances of predatory mammals disturbing birds within the count areas.



The Former Exxon Site Over-Wintering SPA Birds

Heatmap for All Species Sept 16 - Apr 17



Number of birds:

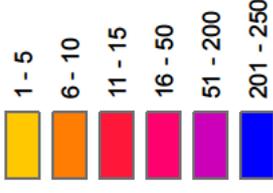
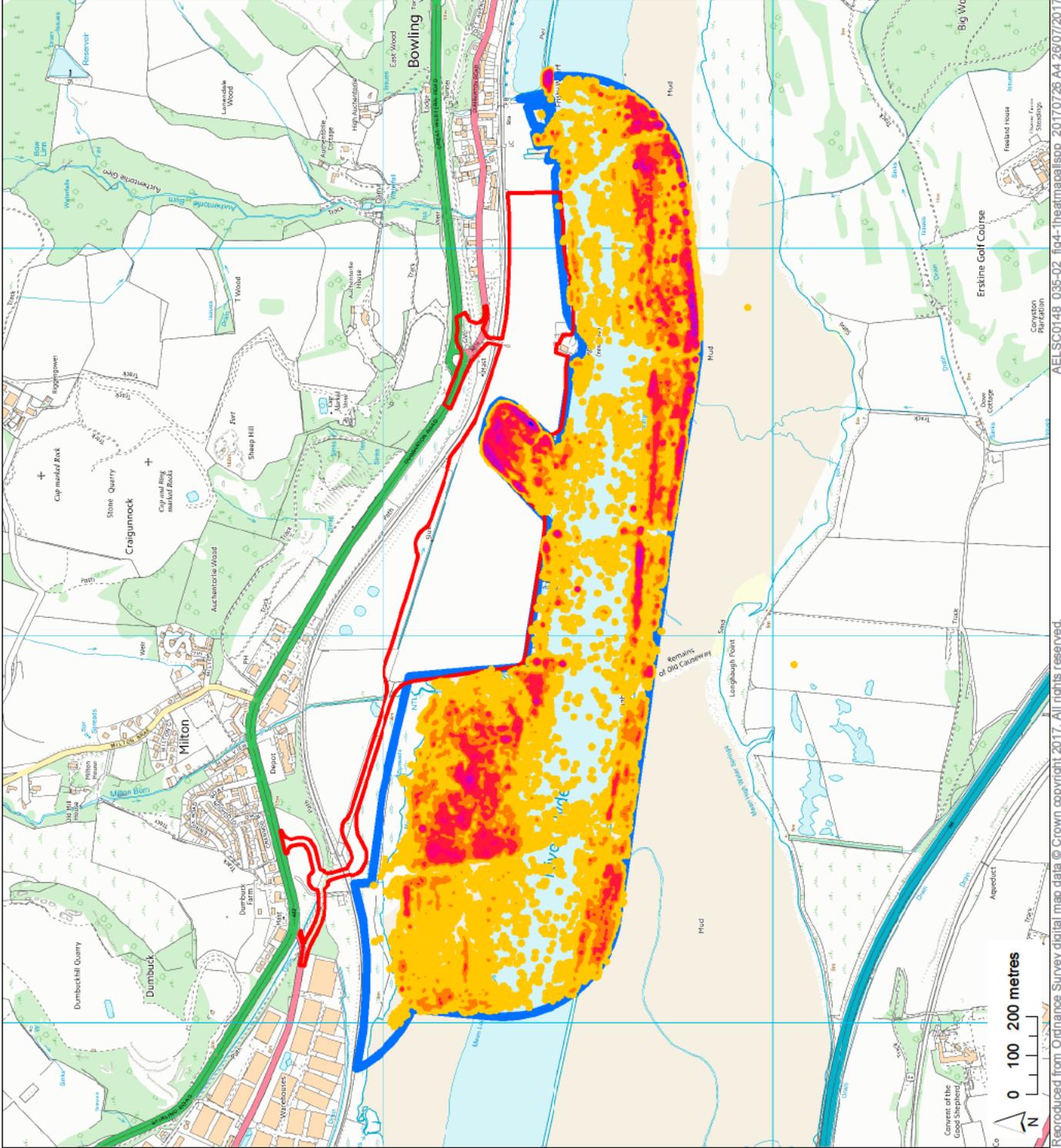


Figure 4.1

Map Scale @ A4: 1:15,000

Surveyed by: AEL
Survey date: Sep 16 - Apr 17
Drawn by: RAH
Checked by: KD
Status: Final



The Former Exxon Site Over-Wintering SPA Birds

Heatmap for All Redshank



Number of redshank:



Figure 4.2

Map Scale @ A4: 1:15,000

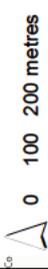
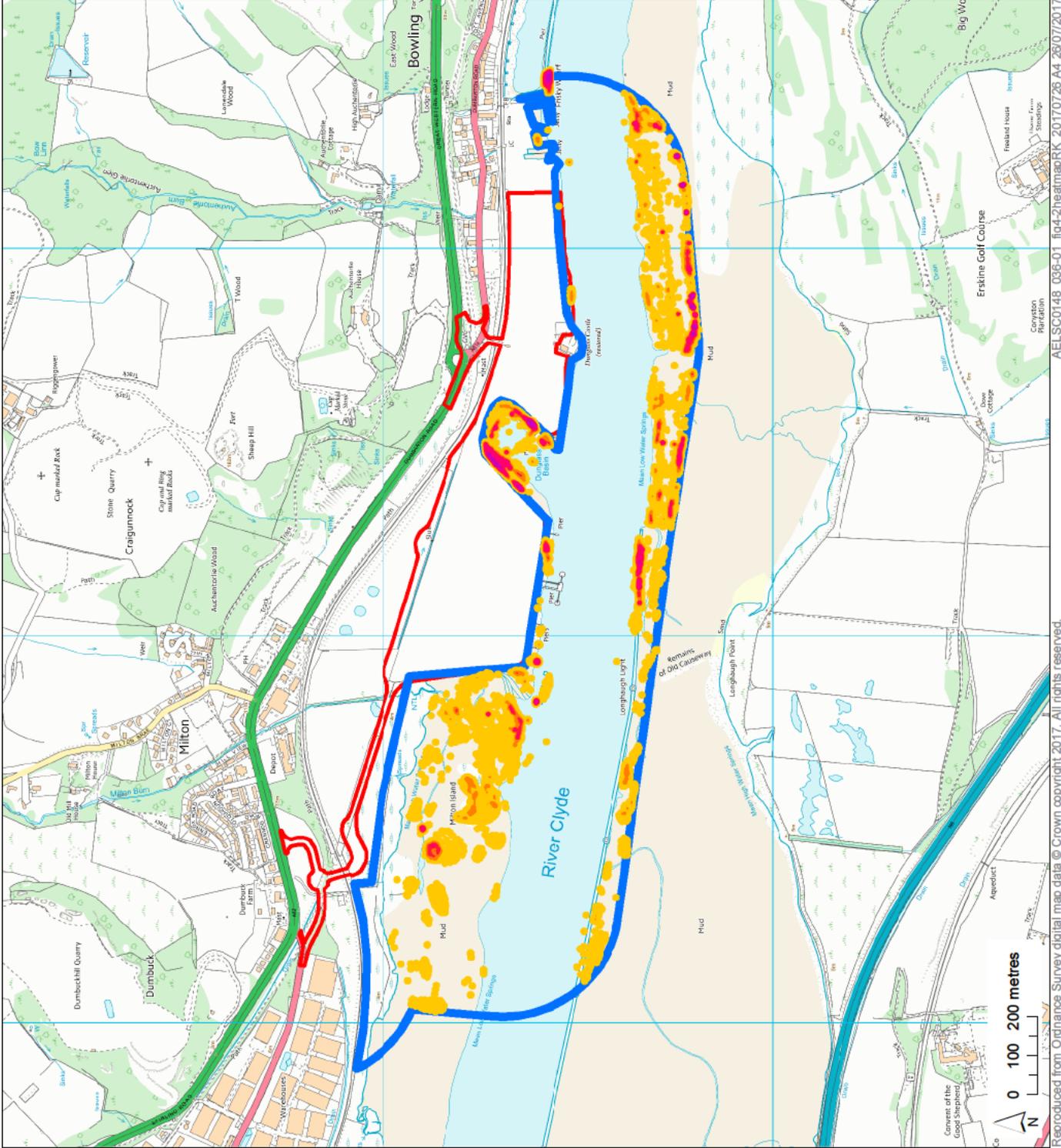
Surveyed by: AEL

Survey date: Sep 16 - Apr 17

Drawn by: RAH

Checked by: KD

Status: Final



The Former Exxon Site Over-Wintering Birds

Over-Wintering Redshank
Through-the-Tide
Sept 2016 - April 2017

- site boundary
- count area
- redshank

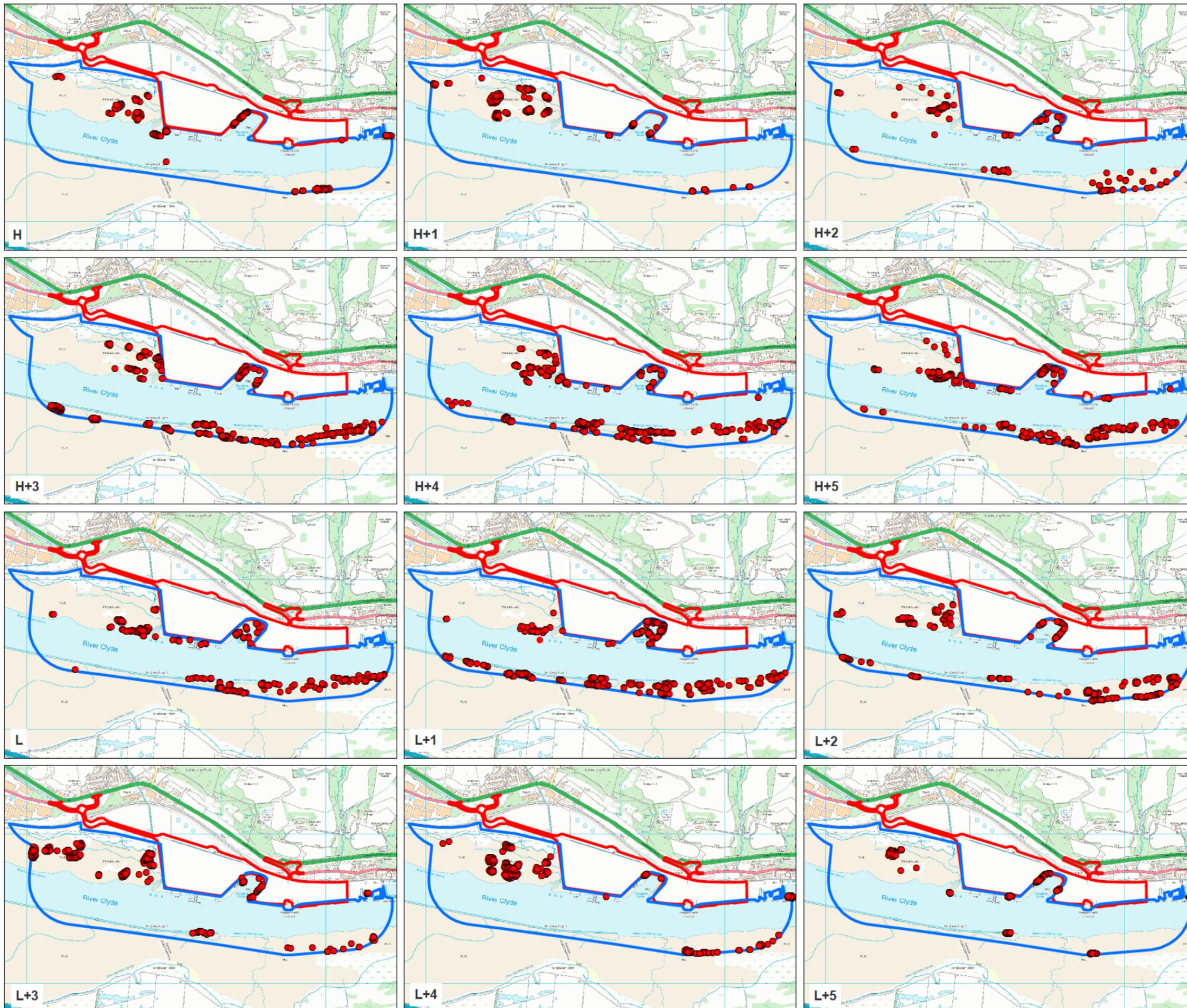


Figure 4.3

Map Scale @ A3: 1:25,000

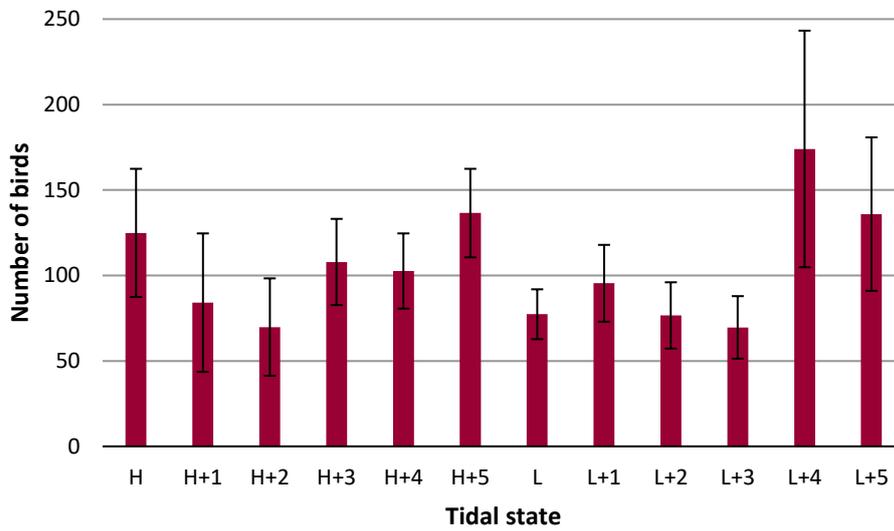
Surveyed by: AEL
Survey date: Sept 17 - Apr 16
Drawn by: RAH
Checked by: KD
Status: Final



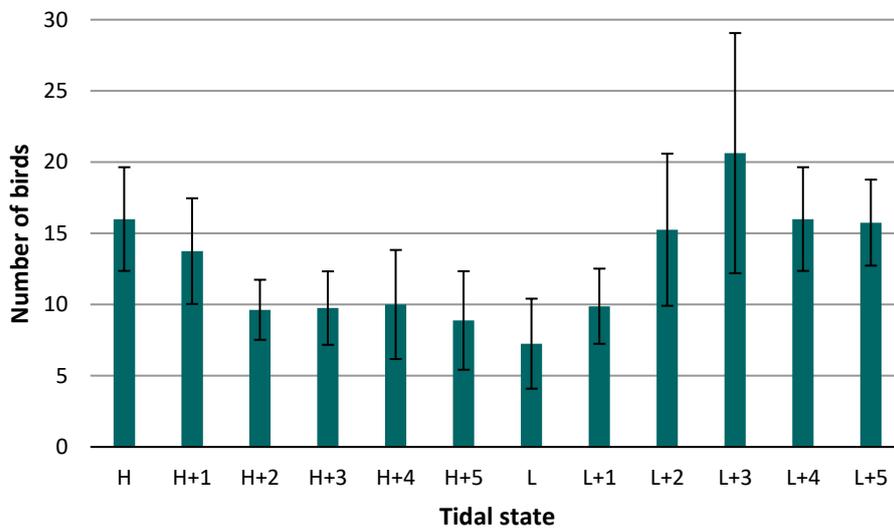
Figure 4.4: Mean number of selected bird species present at different tidal states, Sept 2016 – April 2017.

Error bars show ± 1 SE of the mean.

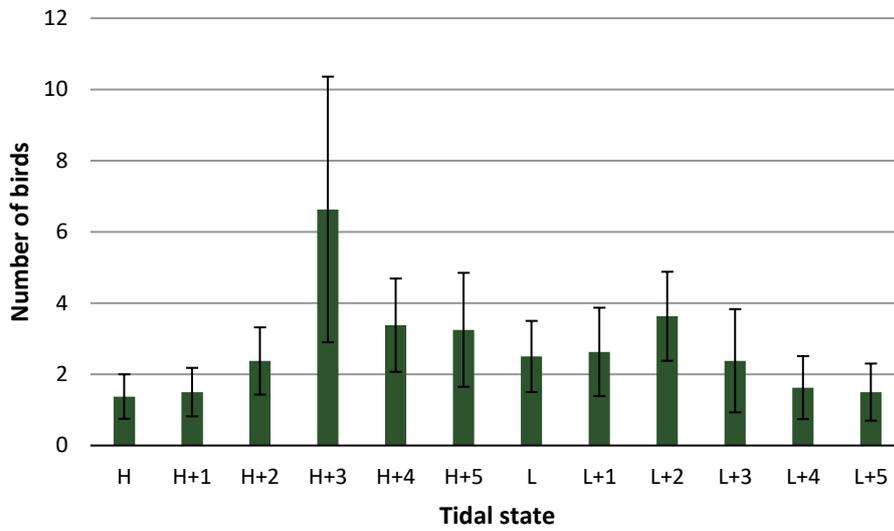
(a) Redshank



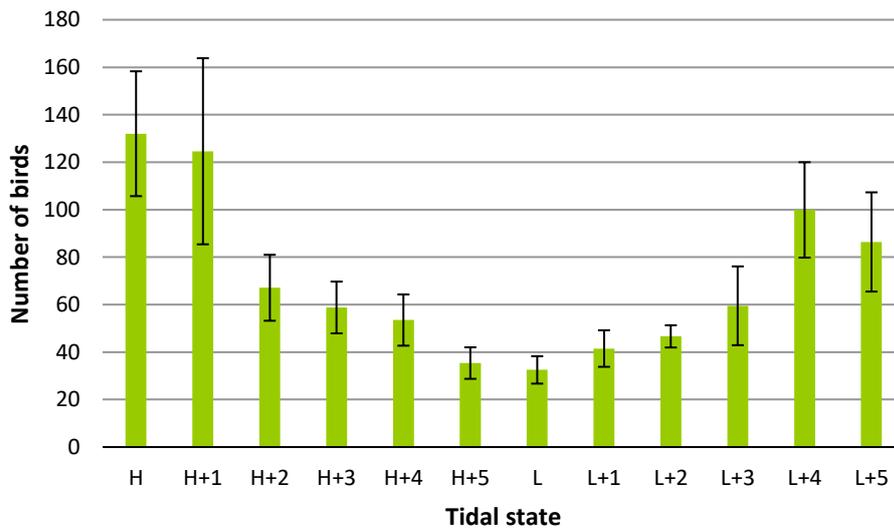
(b) Cormorant



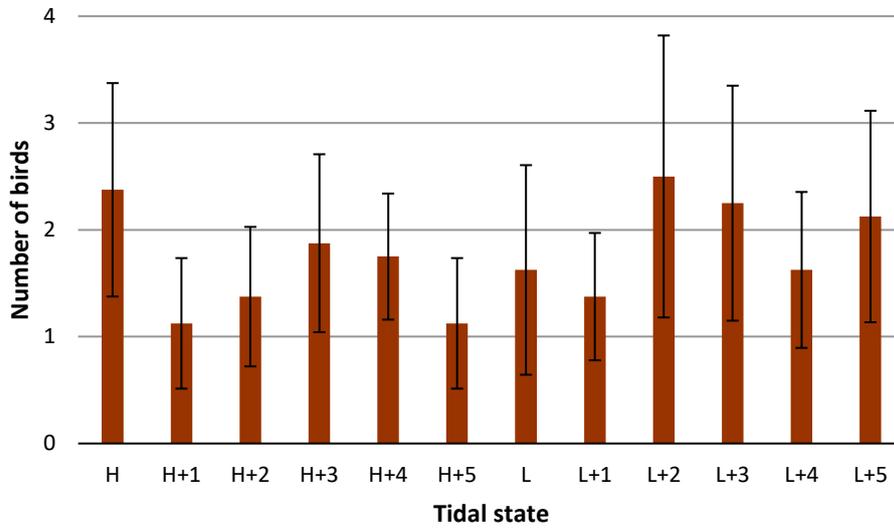
(c) Goldeneye



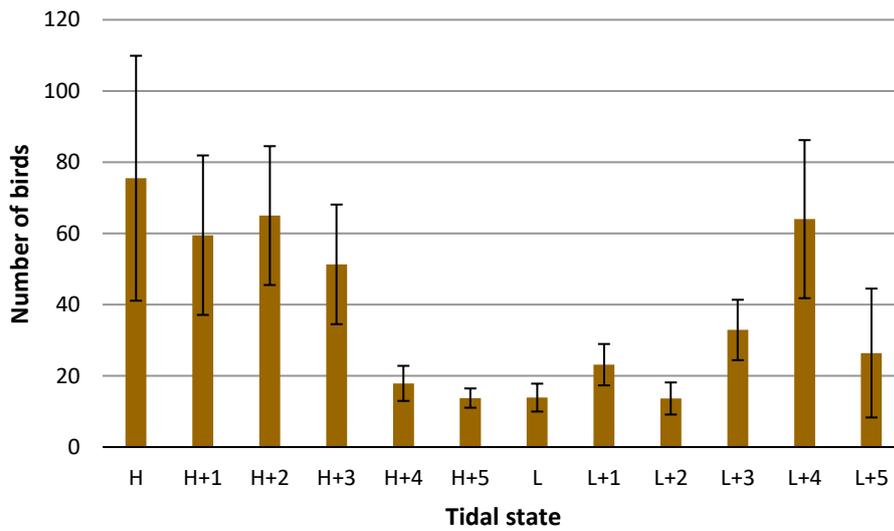
(d) Oystercatcher



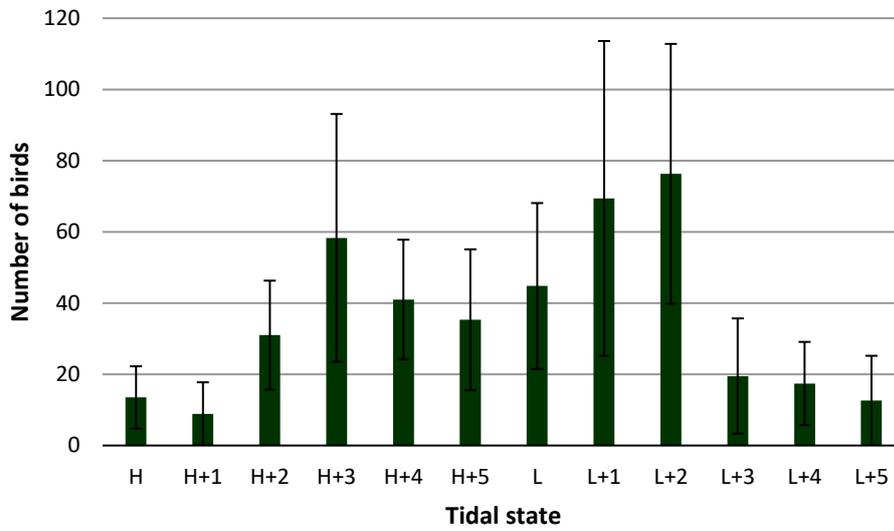
(e) Red-breasted merganser



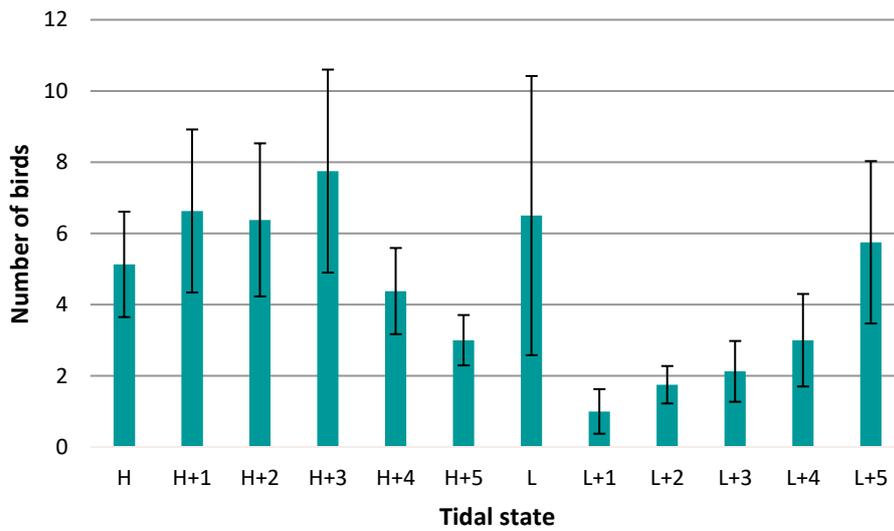
(f) Curlew



(g) Lapwing

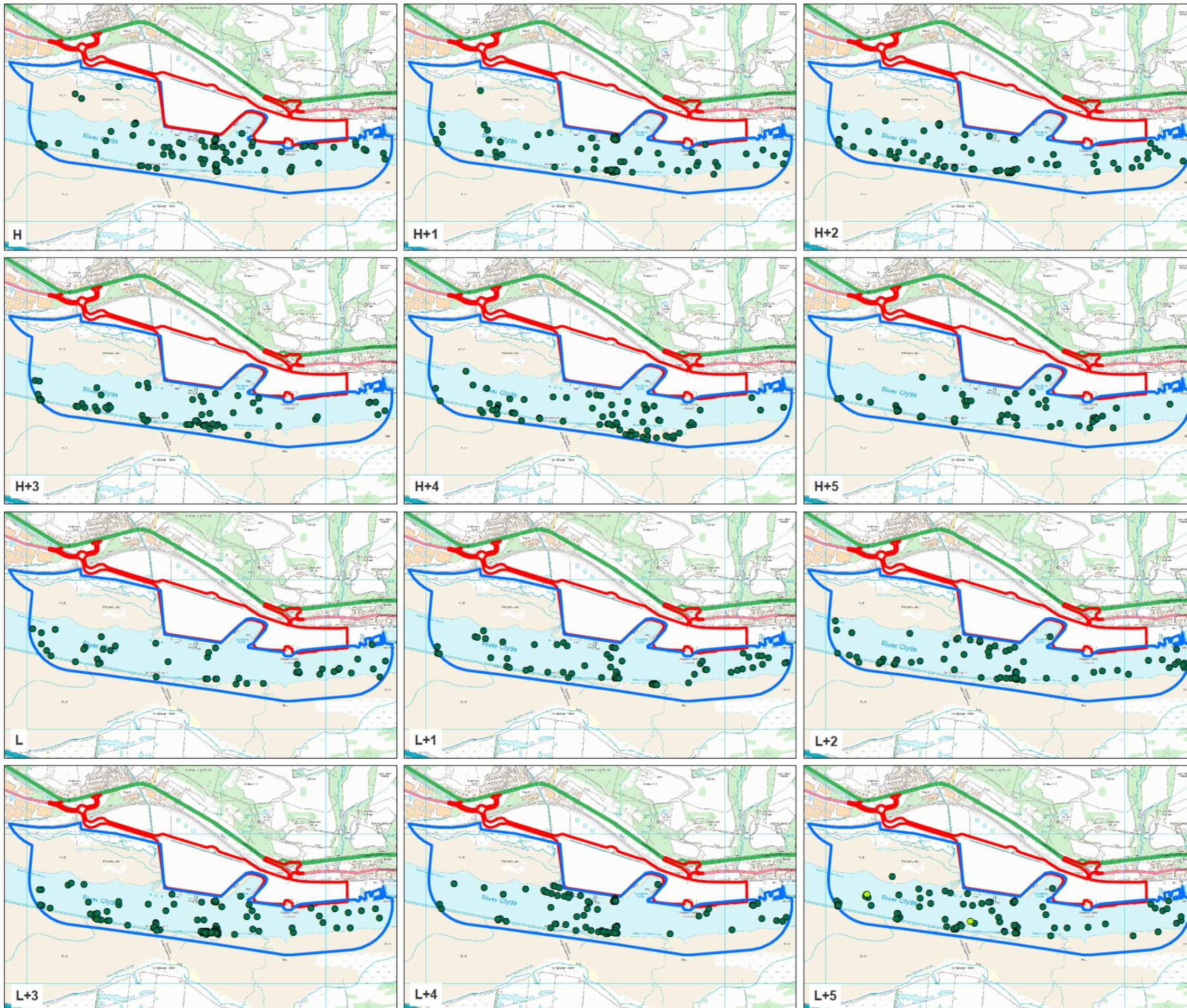


(h) Herring gull



The Former Exxon Site Over-Wintering Birds

Over-Wintering Cormorant and Eider
Through-the-Tide
Sept 2016 - April 2017



site boundary
 count area

● cormorant
● eider (L+5 only)

Figure 4.5

Map Scale @ A3: 1:25,000

Surveyed by: AEL

Survey date: Sept 17 - Apr 16

Drawn by: RAH

Checked by: KD

Status: Final



The Former Exxon Site Over-Wintering Birds

Over-Wintering Goldeneye
Through-the-Tide
Sept 2016 - April 2017

- site boundary
- count area
- goldeneye

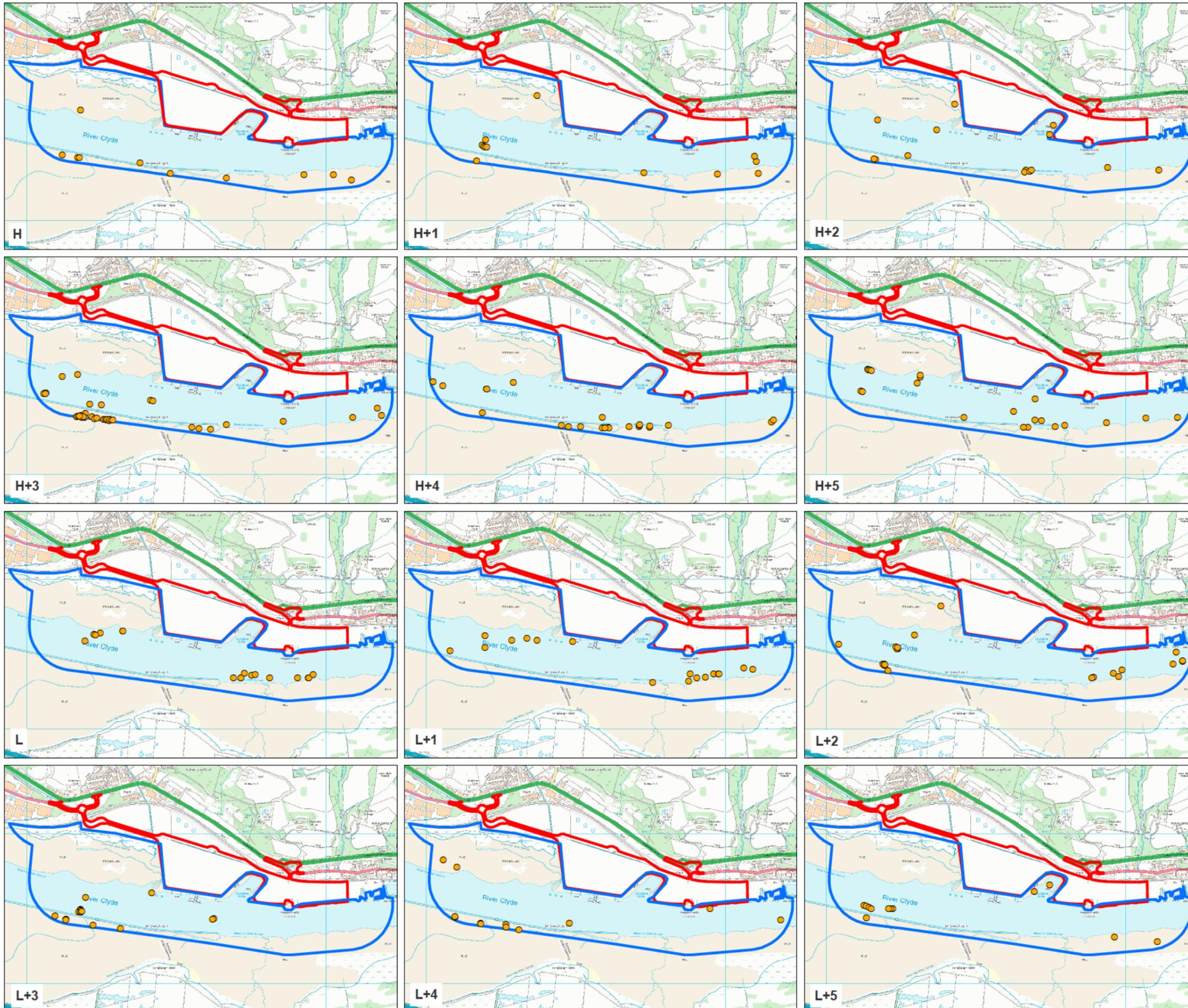


Figure 4.6

Map Scale @ A3: 1:25,000

Surveyed by: AEL
Survey date: Sept 17 - Apr 16
Drawn by: RAH
Checked by: KD
Status: Final



The Former Exxon Site Over-Wintering Birds

Over-Wintering Oystercatcher
Through-the-Tide
Sept 2016 - April 2017

- site boundary
- count area
- oystercatcher

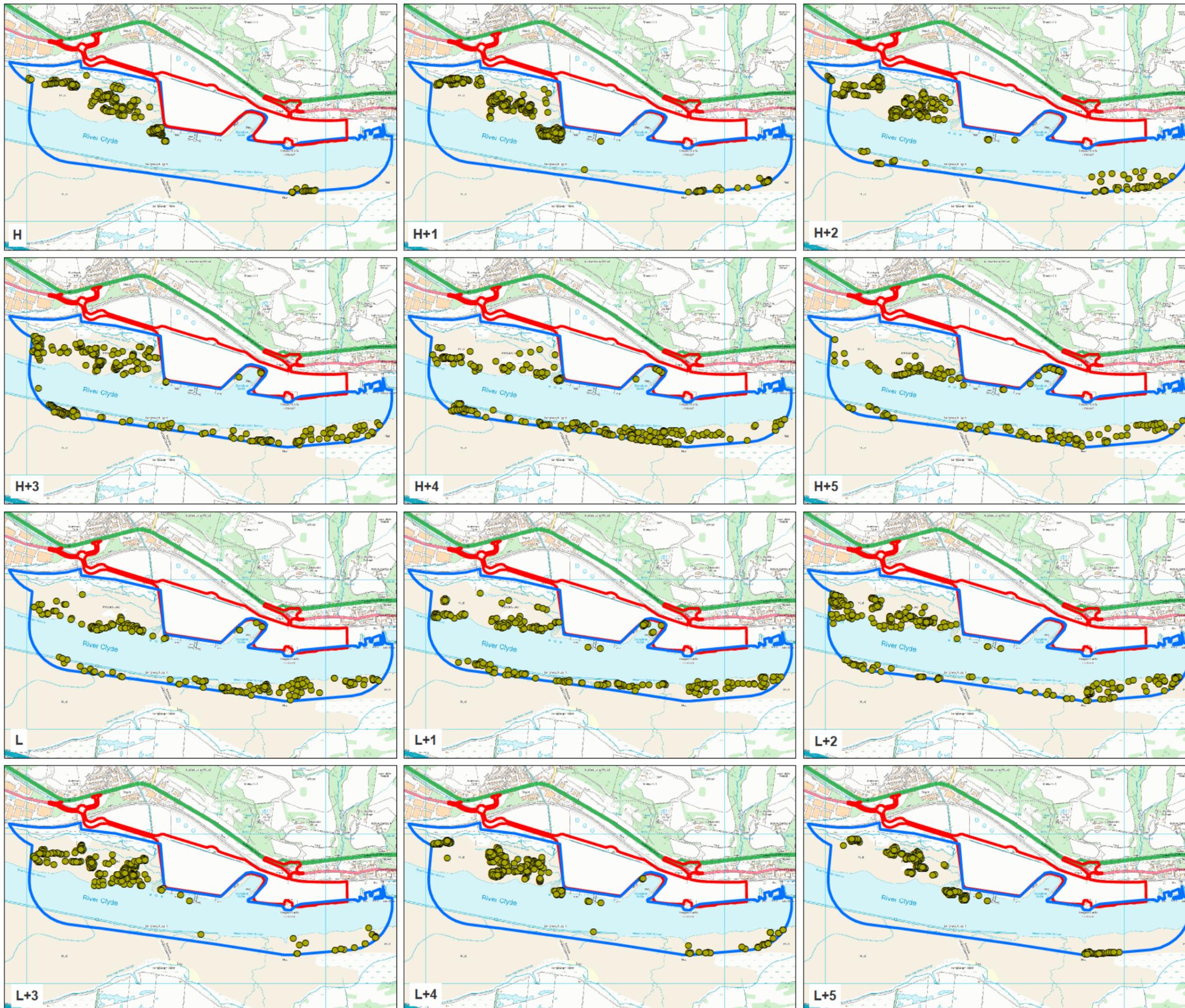


Figure 4.7

Map Scale @ A3: 1:25,000

Surveyed by: AEL

Survey date: Sept 17 - Apr 16

Drawn by: RAH

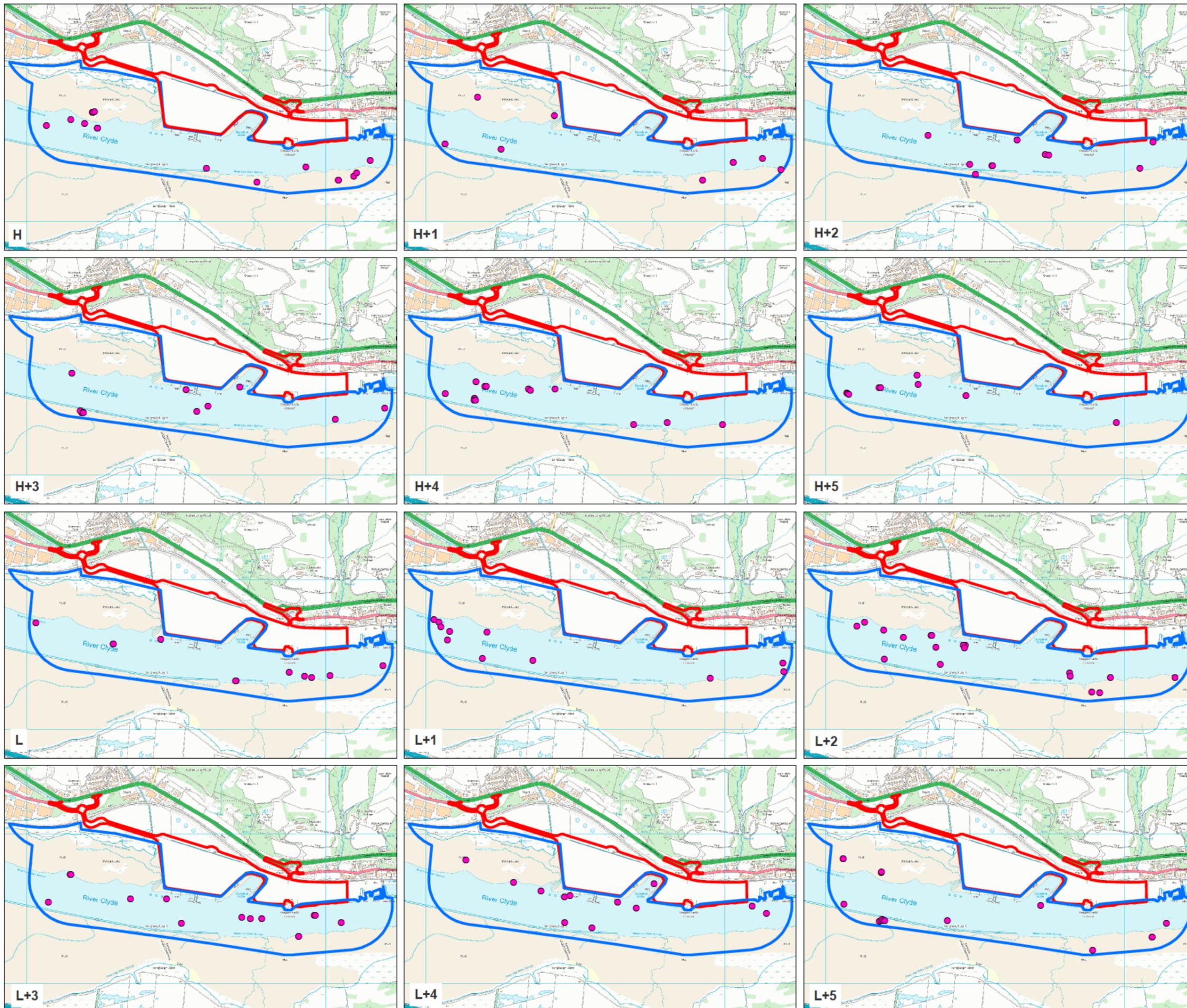
Checked by: KD

Status: Final



The Former Exxon Site Over-Wintering Birds

Over-Wintering Red-Breasted
Merganser Through-the-Tide
Sept 2016 - April 2017



- site boundary
- count area
- red-breasted merganser

Figure 4.8

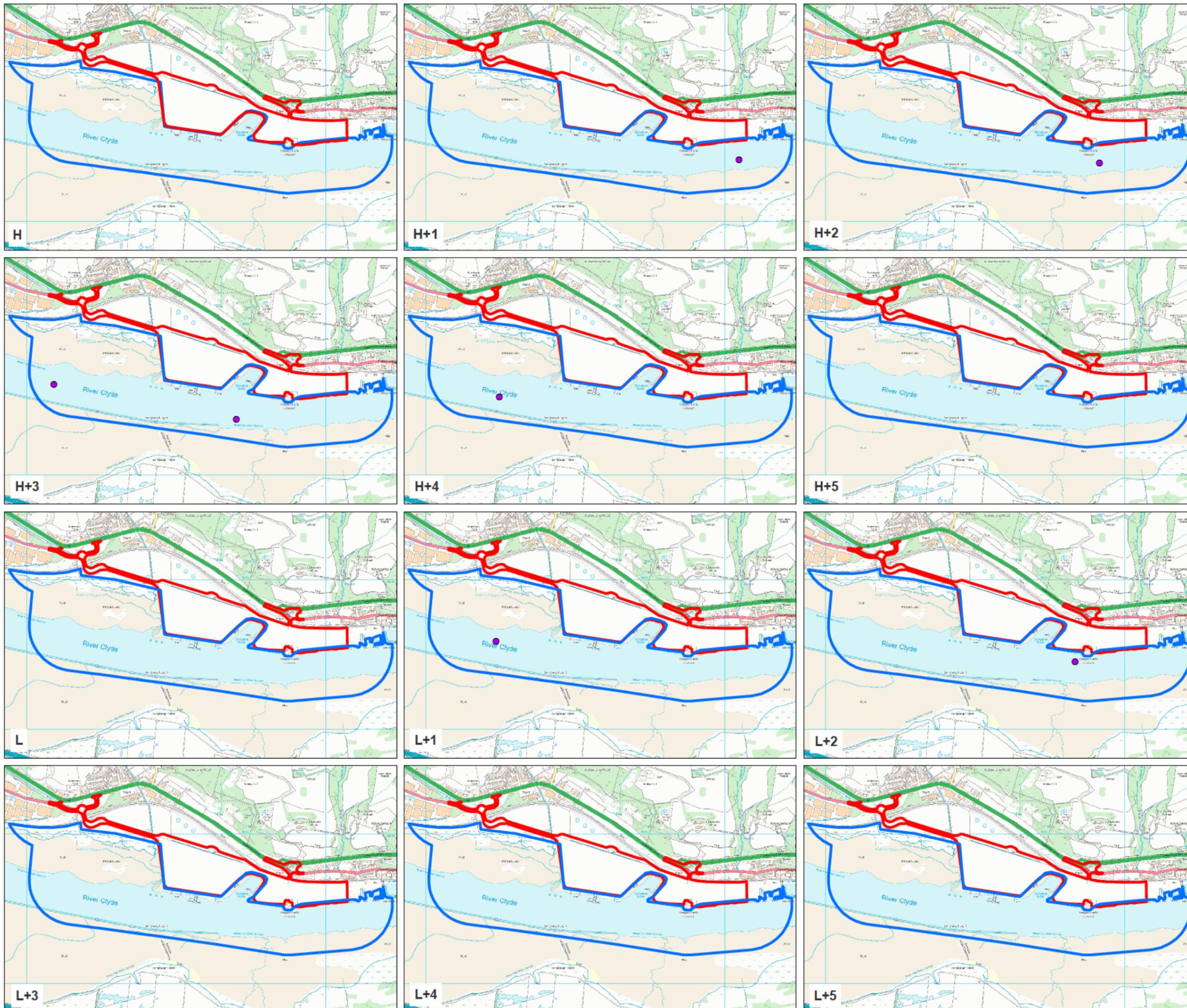
Map Scale @ A3: 1:25,000

Surveyed by: AEL
Survey date: Sept 17 - Apr 16
Drawn by: RAH
Checked by: KD
Status: Final



The Former Exxon Site Over-Wintering Birds

Over-Wintering Red-Throated Diver
Through-the-Tide
Sept 2016 - April 2017



- site boundary
- count area
- red-throated diver

Figure 4.9

Map Scale @ A3: 1:25,000

Surveyed by: AEL
 Survey date: Sept 17 - Apr 16
 Drawn by: RAH
 Checked by: KD
 Status: Final



The Former Exxon Site Over-Wintering Birds

Over-Wintering Curlew
Through-the-Tide
Sept 2016 - April 2017

 site boundary
 count area

Bird species:

 curlew

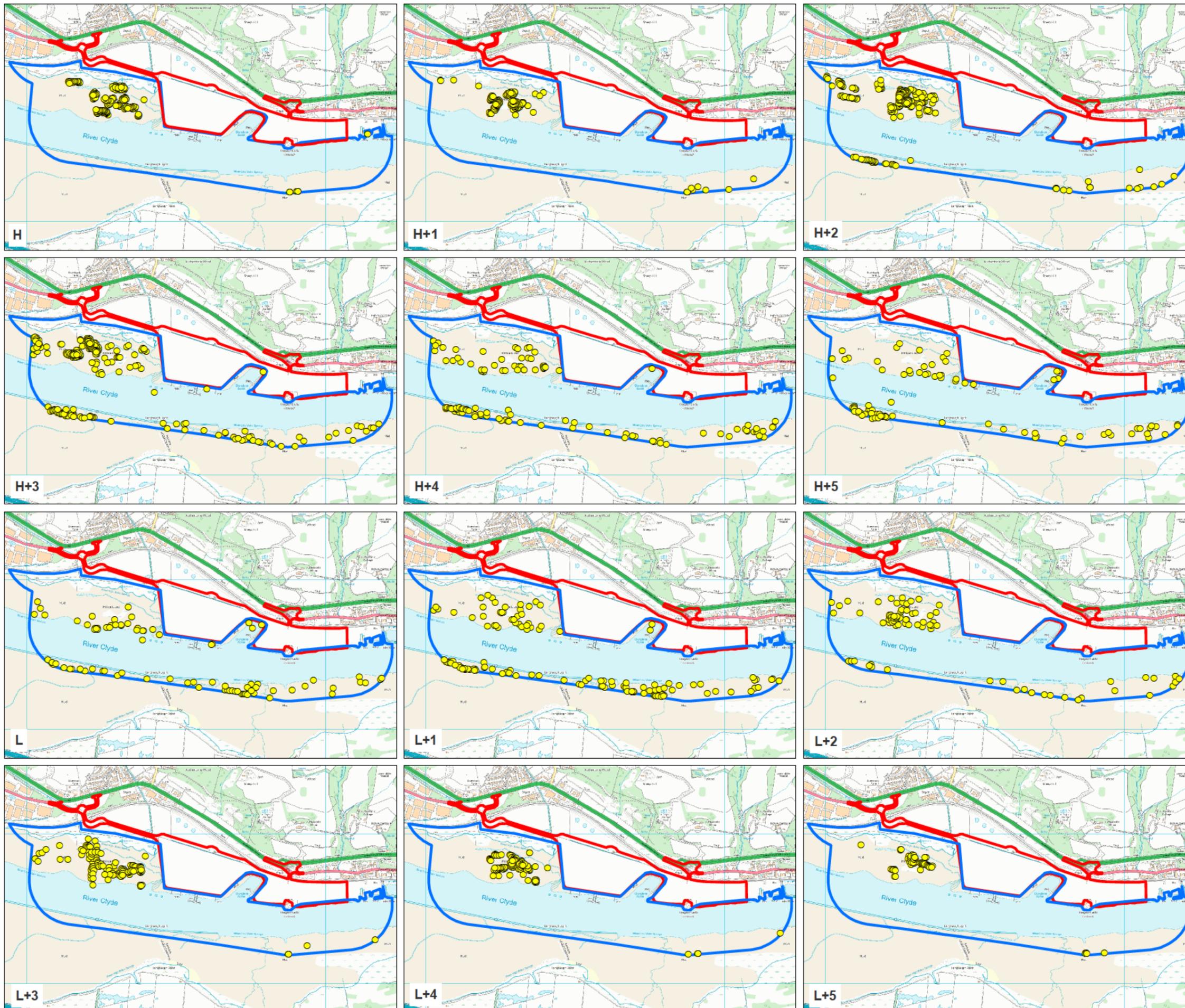


Figure 4.10

Map Scale @ A3: 1:25,000

Surveyed by: AEL

Survey date: Sept 17 - Apr 16

Drawn by: RAH

Checked by: KD

Status: Final



The Former Exxon Site Over-Wintering Birds

Over-Wintering Lapwing
Through-the-Tide
Sept 2016 - April 2017

- site boundary
- count area
- lapwing

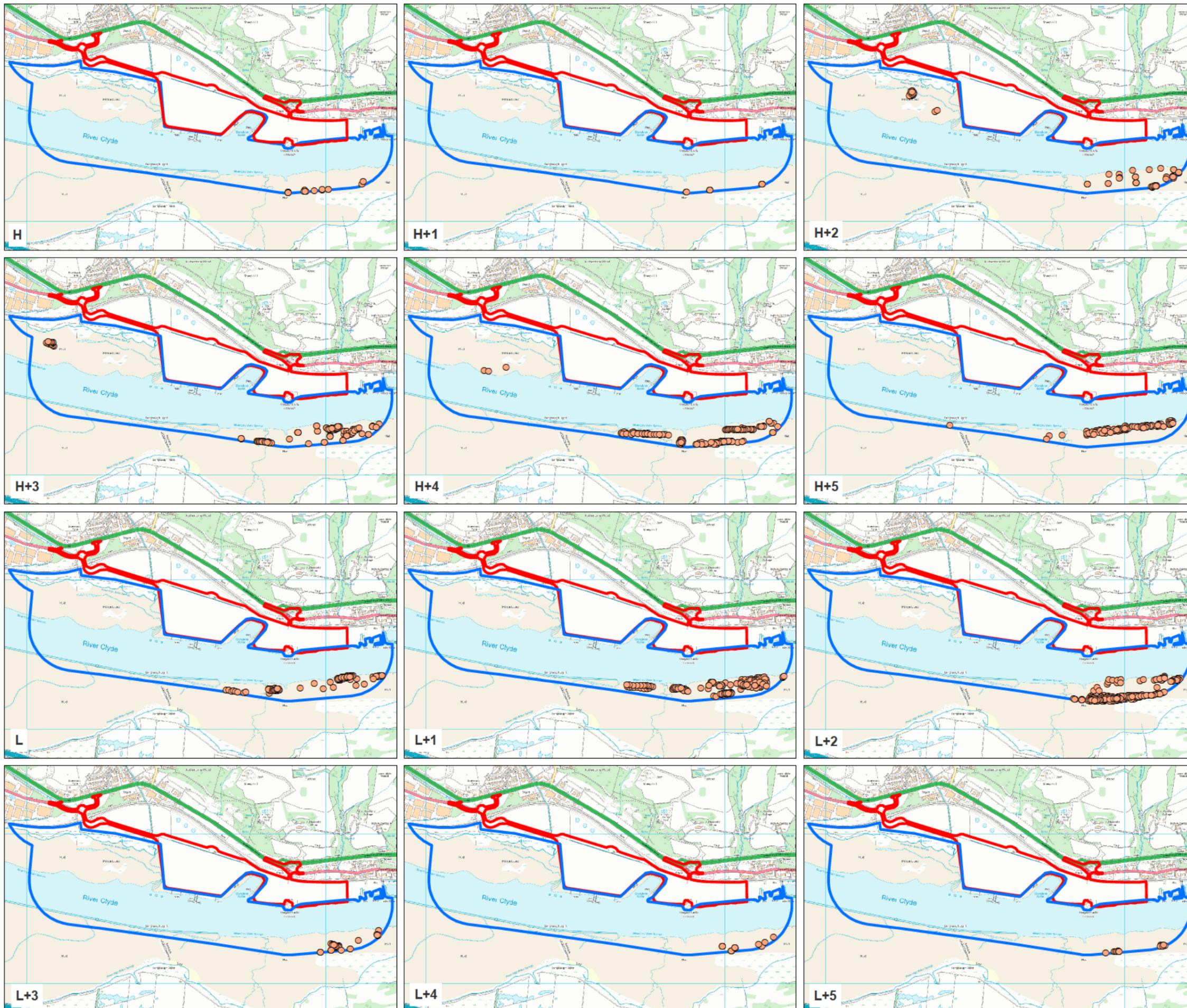


Figure 4.11

Map Scale @ A3: 1:25,000

Surveyed by: AEL

Survey date: Sept 17 - Apr 16

Drawn by: RAH

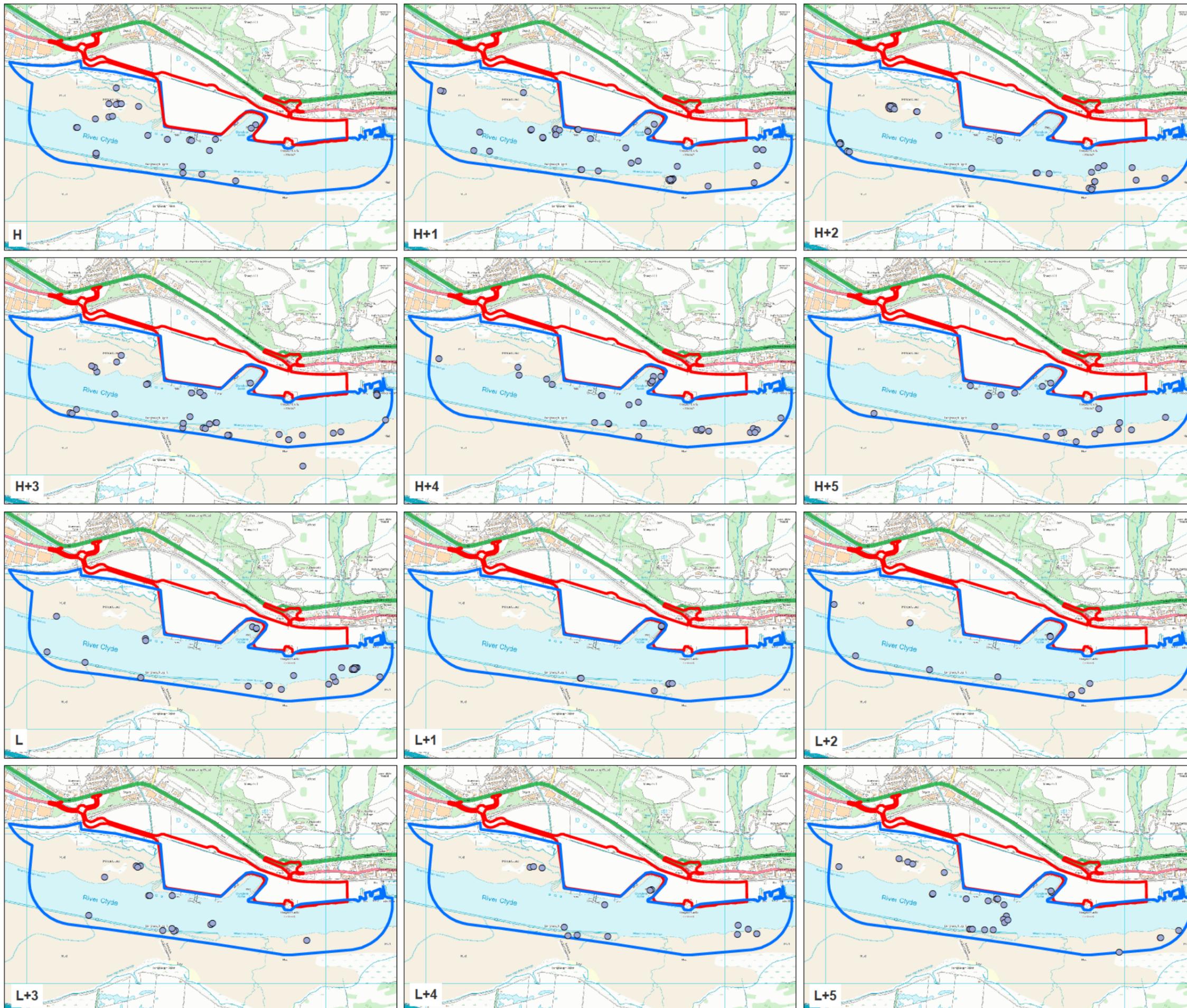
Checked by: KD

Status: Final



The Former Exxon Site Over-Wintering Birds

Over-Wintering Herring Gull
Through-the-Tide
Sept 2016 - April 2017



- site boundary
- count area
- herring gull

Figure 4.12

Map Scale @ A3: 1:25,000

Surveyed by: AEL
Survey date: Sept 17 - Apr 16
Drawn by: RAH
Checked by: KD
Status: Final

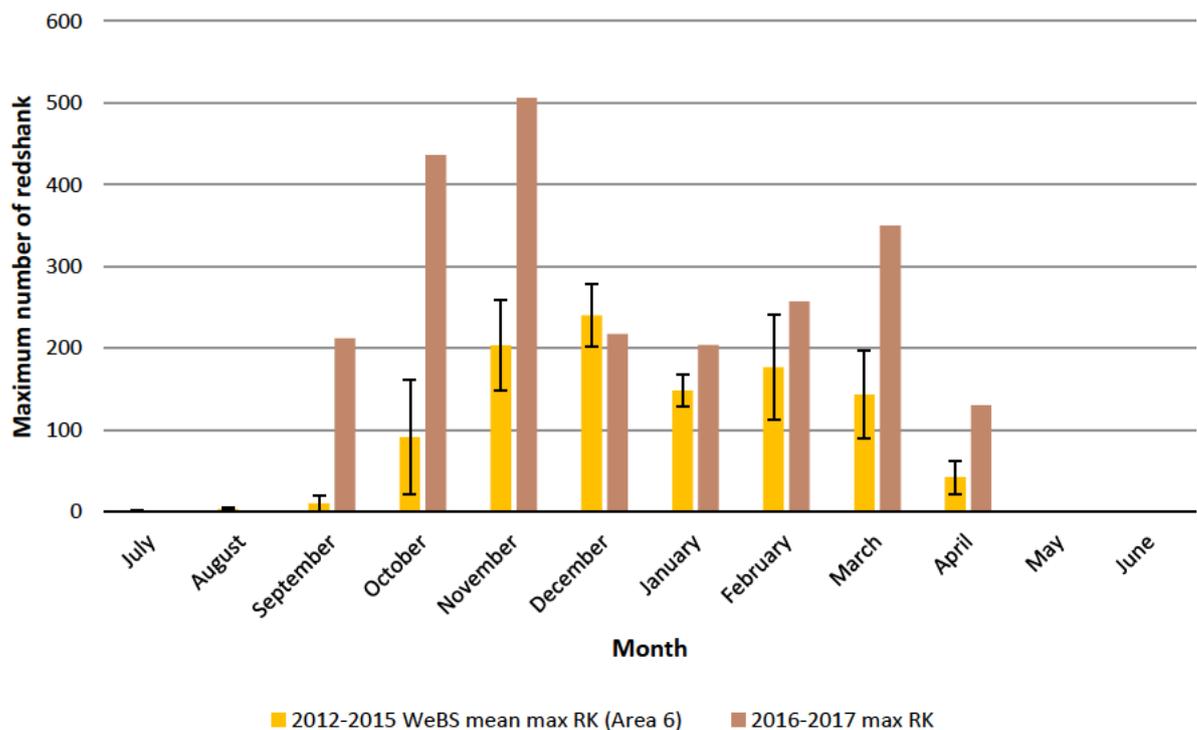


5 Discussion and Recommendations

Comparison of 2016-2017 data with previous SPA surveys

- 5.1 The Wetland Bird Survey (WeBS) is a volunteer survey scheme run by the British Trust for Ornithology (BTO), whereby wetlands around the UK are visited by recorders who count the number of birds present within each WeBS site. A number of WeBS areas cover the study area, but the greatest proportion of the northern shore within the study area is covered by Clyde Estuary 6 (Dunglass Castle to Dumbarton Rock). The southern shore and extreme eastern part of the study area is covered by Clyde Estuary 2 (Erskine Bridge to West Ferry).
- 5.2 A comparison of the 2016-2017 data from the study area with the WeBS data for Area 6 (2012-2015) is provided in **Figure 5.1**. A direct comparison is not possible, due to the incomplete geographical overlap between the study area and WeBS area 6, and that the 2016-2017 data were only collected for the study area between the months of September and April. However, the general trends are similar – the redshank are reliably within the part of the SPA covered by the study area by September each year, and have left before the start of May. Peak numbers are slightly less predictable but the data suggest that this occurs around November or December for each of the years covered by these studies. There was a second peak in March 2017 which was not reflected in the WeBS data (but may be so in the Clyde Estuary 2 dataset).

Figure 5.1: Comparison of 2016-2017 data with WeBS data (Area 6) recorded 2012-2015.



Importance of study area in context of wider SPA

- 5.3 On the basis that the small proportion of the whole SPA sampled in 2016-2017 supported a typical number and distribution of redshank for those months sampled, its relative importance within the context of the wider SPA can be evaluated on the basis of previous survey data which encompassed the whole designated site.
- 5.4 Peak numbers and densities of redshank recorded in 2016-2017 are summarised in the left-hand half of **Table 5.1**. This shows that proportionally the study area supported (in all months) peak numbers of redshank that were greater than the proportion of the SPA represented. This is not surprising given that these birds will move around the resource of the entire area selecting the optimal areas for foraging and roosting at different states of the tide and time of day. Not all areas will be used equally, but many areas will see similar peak numbers as the birds move around them.

Table 5.1: Number and density of redshank per month comparing the 2016-2017 study area and that in Harding (2008).

Month	2016-2017 surveys			Harding (2008)		
	Peak count of redshank	% of Inner Clyde total ¹	Density (redshank/ha) ²	Density (redshank/ha) for Erskine Bridge to Bowling	Density (redshank/ha) for Dunglass Castle	Density (redshank/ha) for Milton Island
September	212	12.2	4.3			
October	436	25.1	8.9			
November	506	29.1	10.3	4.3	1.2	1.6
December	217	12.5	4.4	1.7	2.2	2.0
January	204	11.7	4.2	1.4	2.3	1.0
February	257	14.8	5.2	8.0	1.6	5.0
March	350	20.1	7.1			
April	130	7.5	2.6			

n.b. Densities and percentages have been rounded up, and are for peak counts only.

- 5.5 **Table 5.2** also provides a comparison of the 2016-2017 redshank density data with those recorded in overlapping sections of the counts made in 2007-2008. The 2016-2017 data differ from all of the 2007-2008 data, although some general trends can potentially be identified, such as November and February being particularly key months. The data are not directly comparable, as the 2007-2008 data were low tide counts as opposed to through-the-tide, and as shown in **Section 4**, some of the highest counts of redshank were made at higher tidal states rather than at low tide. In addition, the 2007-2008 data were collected using the “look-see” methodology described by Bibby *et al.* (2000). In this methodology, a

¹ Totals taken from Harding (2008) as being c. 1740.

² Taken as % of SPA falling within study area (49.15 ha).



single count is undertaken once a month by a recorder, for the entire area. The potential inaccuracies of this are well known, including the under-recording of secretive species, and difficulties covering larger sites when movement of the surveyor to achieve coverage may cause individual birds to be counted more than once, or not at all.

- 5.6 However, the distribution maps and time sequence analyses seem to indicate that the study area is well-used by birds of conservation importance throughout the tidal cycle. This is in contrast to other parts of the SPA where, particularly for redshank, greater numbers of birds are recorded during lower tidal states, reflecting the value of the feeding areas for the birds. This behaviour was only clearly seen for lapwing; other species, such as oystercatcher, demonstrated the opposite behaviour – preferentially using the area at high tide, for roosting rather than feeding.
- 5.7 The 2017 survey data did not include any low tide survey periods during the hours of darkness. However, it is known that redshank, when disturbed from key feeding areas during the day, will return to them for nocturnal feeding if the energy gain benefits from this are outweighed by the potential risks (Burton and Armitage, 2005). The night time value of the feeding areas within the Study Area is therefore unknown.

Wider conservation importance of study area

- 5.8 As would be expected for a SPA, the study area supported a large number of bird species and individual birds of notable conservation importance. The importance of the study area for over-wintering birds has therefore been confirmed by these surveys.
- 5.9 In particular, the data show a high level of activity for both redshank and several other species in the Dunglass Basin, with redshank using the stone banking as a resting area at various stages of the tidal cycle. This part of the SPA is very sheltered and the topography of the basin is a rare feature in the SPA, most of which is open exposed mudflats. It is therefore possible that this part of the study area provides a particularly important resting area for the redshank.



6 Conclusions

- 6.1 Over-wintering bird surveys were undertaken of parts of the Inner Clyde SPA between September 2016 and April 2017. The purpose of the surveys was to identify the range, distribution and abundance of over-wintering birds within 300 m of the former Exxon Site at Bowling, in order to inform an Ecological Impact Assessment and Habitats Regulations Assessment of redevelopment proposals there.
- 6.2 The surveys found that the study area was well-used by over-wintering redshank, at all stages of the tide. Only a handful of species, such as lapwing, were found to use the area preferentially during low tide, and some species, such as oystercatcher, had a preference for higher tidal states.
- 6.3 All parts of the SPA within 300 m of the Site were used by over-wintering birds, although parts of Milton Island, Dunglass Basin and the southern shore of the River Clyde saw particularly high densities of birds.
- 6.4 A range of disturbances were observed throughout the surveys, including some arising from natural sources as well as human influences. Although birds were sometimes disturbed by boats moving through the water, or more frequently the wash created by their passage, they usually returned to the area within the survey time. Human presence on the northern shore of the River Clyde, adjacent to the Site, was not commonplace and unlike other parts of the SPA, this will not be a disturbance source to which the birds will be particularly habituated.
- 6.5 The study area investigated during this survey is thought to be representative of the SPA and SSSI in terms of its species assemblage and abundance of birds. These data can therefore be used to consider in full the potential effects of any proposals at the former Exxon Site on this bird assemblage.



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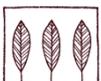
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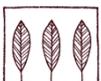


Appendix A

Survey Timings



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Wind speed: Beaufort scale (0-12); wind direction: compass points; Rain: 0 = none, 1 = drizzle/mist; 2 = light showers, 3 = heavy showers, 4 = heavy rain; cloud cover: in eighths, cloud height: 0 = <150 m, 1 = 150-500 m, 2 = > 500 m; visibility: 0 = poor (< 1 km), 1 = moderate (1-2 km), 3 = good (> 2km).

September 2016

CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind direction	End rain	End cloud cover	End cloud height	End visibility
1	High	13/09/2016	10:30	RDG	2	SW	1	8	1	2	SW	0	7	1	2
1	High+1	28/09/2016	13:20	RDG	4	SW	1	8	0	2	SW	1	8	0	2
1	High+2	27/09/2016	12:40	SS	3	WSW	0	7	2	2	WSW	0	5	2	2
1	High+3	26/09/2016	12:10	SS	2	S	0	8	2	2	S	2	8	2	2
1	High+4	23/09/2016	10:00	RDG	4	S	0	7	2	2	S	0	7	2	2
1	High+5	22/09/2016	10:05	SS	2	SW	0	1	2	2	W	0	1	2	2
1	Low	21/09/2016	10:20	SS	2	S	0	5	2	2	S	0	7	2	2
1	Low+1	20/09/2016	10:40	RDG	2	S	0	3	2	2	S	0	4	2	2
1	Low+2	19/09/2016	10:50	SS	3	W	0	5	2	2	W	0	7	2	2
1	Low+3	16/09/2016	09:55	SS	3	NE	0	1	2	2	NW	0	1	2	2
1	Low+4	15/09/2016	10:20	SS	2	E	0	8	1/2	2	E	0	8	1/2	2
1	Low+5	14/09/2016	10:35	RDG	4	NE	0	8	1	2	NE	0	8	1	2
3	High	14/09/2016	11:40	RDG	5	NE	0	8	1	2	NE	0	8	1	2
3	High+1	13/09/2016	11:35	RDG	3	SW	0	7	2	2	SW	0	8	2	2
3	High+2	28/09/2016	14:25	RDG	4/5	SW	0	8	0	2	SW	0	8	0	2
3	High+3	27/09/2016	13:45	SS	4	W	0	7	2	2	W	2	7	2	2
3	High+4	26/09/2016	13:15	SS	3	S	2	8	2	2	S	0	8	2	2
3	High+5	23/09/2016	11:05	RDG	4	S	0	7	2	2	S	0	7	2	2
3	Low	22/09/2016	11:10	SS	3	W	0	1	2	2	W	0	1	2	2
3	Low+1	21/09/2016	11:25	SS	3	S	0	7	2	2	SE	0	7	2	2
3	Low+2	20/09/2016	11:45	RDG	2/3	SE	0	3	2	2	S	0	4	2	2
3	Low+3	19/09/2016	11:55	SS	4	W	0	7	2	2	W	0	7	2	2
3	Low+4	16/09/2016	11:00	SS	3	W	0	1	2	2	W	0	3	2	2



CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind direction	End rain	End cloud cover	End cloud height	End visibility
3	Low+5	15/09/2016	11:30	SS	2	E	0	8	2	2	S	0	7	2	2
4	High	15/09/2016	12:30	SS	2	E	0	7	2	2	E	0	7	2	2
4	High+1	14/09/2016	12:45	RDG	4	E	0	8	1	2	E	0	8	1	2
4	High+2	13/09/2016	12:40	RDG	2	SW	0	7	2	2	SW	0	7	2	2
4	High+3	28/09/2016	15:30	RDG	5	SW	3	8	0	2	SW	3	8	0	2
4	High+4	27/09/2016	14:50	SS	-	-	-	-	-	-	-	-	-	-	-
4	High+5	26/09/2016	14:55	SS	3	S	2	8	2	2	S	0	8	2	2
4	Low	23/09/2016	12:10	RDG	4	SSW	0	8	2	2	SSW	0	8	2	2
4	Low+1	22/09/2016	12:15	SS	2	W	0	1	2	2	W	0	1	2	2
4	Low+2	21/09/2016	12:30	SS	3	SE	0	7	2	2	SE	0	7	2	2
4	Low+3	20/09/2016	12:50	RDG	3	S	0	6	2	2	S	0	6	2	2
4	Low+4	19/09/2016	13:00	SS	3	W	0	7	2	2	W	0	5	2	2
4	Low+5	16/09/2016	12:05	SS	4	W	0	3	2	2	W	0	3	2	2
5	High	15/06/2016	13:10	SS	3	W	0	3	2	2	W	0	5	2	2
5	High+1	15/09/2016	13:35	SS	2	E	0	7	2	2	S	0	5	2	2
5	High+2	14/09/2016	13:50	RDG	5	E	0	8	1	2	E	0	8	1	2
5	High+3	13/09/2016	13:45	RDG	2	SW	0	7	2	2	SW	0	8	2	2
5	High+4	28/09/2016	16:35	RDG	5/6	SW	4	8	0	2	SW	2	8	0	2
5	High+5	27/09/2016	15:55	SS	4	W	0	7	2	2	W	0	7	2	2
5	Low	26/09/2016	16:00	SS	2	S	0	5	2	2	S	0	7	2	2
5	Low+1	23/09/2016	13:15	RDG	5	SSW	0	8	2	2	SSW	0	8	2	2
5	Low+2	22/09/2016	13:20	SS	2	W	0	1	2	2	W	0	3	2	2
5	Low+3	21/09/2016	13:35	SS	3	S	0	7	2	2	S	0	7	2	2
5	Low+4	20/09/2016	13:55	RDG	4/5	S	0	7	2	2	S	0	7	2	2
5	Low+5	19/09/2016	14:05	SS	2	W	0	5	2	2	W	0	5	2	2
6	High	19/09/2016	15:10	SS	2	W	0	7	2	2	W	0	5	2	2
6	High+1	16/09/2016	14:15	SS	3	W	0	5	2	2	W	0	5	2	2
6	High+2	15/09/2016	14:40	SS	2	S	0	5	2	2	SE	0	5	2	2
6	High+3	14/09/2016	14:55	RDG	4	E	0	8	1	2	E	0	8	1	2
6	High+4	13/09/2016	14:50	RDG	2	SW	2	8	1	2	SW	0	7	2	2



CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind direction	End rain	End cloud cover	End cloud height	End visibility
6	High+5	20/09/2016	08:30	RDG	2	E	0	5	2	2	E	0	5	2	2
6	Low	27/09/2016	17:00	SS	3	W	0	7	2	2	W	0	7	2	2
6	Low+1	26/09/2016	17:05	SS	2	S	0	7	2	2	S	0	7	2	2
6	Low+2	23/09/2016	14:20	RDG	5	SSW	0	8	2	2	SSW	0	8	2	2
6	Low+3	22/09/2016	14:25	SS	2	W	0	3	2	2	W	0	3	2	2
6	Low+4	21/09/2016	14:40	SS	2	S	0	7	2	2	S	0	8	2	2
6	Low+5	28/09/2016	11:10	RDG	2	SW	4	8	0	2	SW	3	8	0	2
7	High	28/09/2016	12:15	RDG	2	SW	4	8	0	2	SW	3	8	0	2
7	High+1	27/09/2016	11:35	SS	4	WSW	0	7	2	2	WSW	0	5	2	2
7	High+2	26/09/2016	11:05	SS	2	S	2	8	2	2	S	0	7	2	2
7	High+3	15/09/2016	15:45	SS	2	E	0	5	2	2	E	0	7	2	2
7	High+4	14/09/2016	16:00	RDG	4	E	0	8	1	2	E	0	8	1	2
7	High+5	13/09/2016	15:55	RDG	2	SW	0	8	1	2	SW	0	8	1	2
7	Low	20/09/2016	09:35	RDG	2	E	0	6	2	2	E	0	6	2	2
7	Low+1	19/09/2016	09:50	SS	2	W	0	1	2	2	W	0	3	2	2
7	Low+2	16/09/2016	09:00	SS	3	E	0	3	2	2	E	0	1	2	2
7	Low+3	23/09/2016	15:25	RDG	5	SW	0	8	2	2	SW	1	8	1	2
7	Low+4	22/09/2016	15:30	SS	3	W	0	1	2	2	W	0	3	2	2
7	Low+5	21/09/2016	15:45	SS	2	S	0	8	2	2	S	2/3	8	2	2

October 2016

CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
1	High	11/10/2016	08:30	RG	3	E	0	8	1	2	3	E	0	8	1	2
1	High+1	18/10/2016	15:55	TE	1	N/A	0	6	2	2	2	WSW	0	6	2	2
1	High+2	17/10/2016	16:20	SS	2	SSE	0	7	2	2	2	SSE	0	7	2	2
1	High+3	14/10/2016	15:15	SS	3	E	2	7	2	2	3	E	0	7	2	2



CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
1	High+4	13/10/2016	15:30	SS	3	E	0	5	2	2	3	E	0	7	2	2
1	High+5	12/10/2016	15:25	SS	3	E	0	7	2	2	3	E	0	7	2	2
1	Low	03/10/2016	08:35	SS	2	E	0	1	2	2	2	E	0	3	2	2
1	Low+1	11/10/2016	14:25	RG	2	NE	0	8	1	2	2	NE	0	7	1	2
1	Low+2	07/10/2016	12:50	TE	2	E	0	8	2	2						
1	Low+3	06/10/2016	13:20	RG	4	E	0	1	1	2	4	E	0	1	1	2
1	Low+4	05/10/2016	13:50	RG	4	SE	0	6	1	2	5	SE	0	5	1	2
1	Low+5	04/10/2016	14:25	SS	3	E	0	7	2	2	2	E	0	7	2	2
3	High	12/10/2016	10:00	SS	3	E	0	7	2	2	3	E	0	5	2	2
3	High+1	11/10/2016	09:35	RG	3	E	0	8	1	2	4	E	0	8	1	2
3	High+2	10/10/2016	09:00	RG	1	NE	0	2	2	2	1	NE	0	3	2	2
3	High+3	07/10/2016	08:05	RG	6	E	0	8	1	2	6	E	0	8	1	2
3	High+4	14/10/2016	16:20	SS	3	E	2	8	2	2	3	E	2	8	2	2
3	High+5	05/10/2016	08:25	RG	5	E	0	7	1	2	5	E	0	8	1	2
3	Low	04/10/2016	09:00	SS	3	E	0	3	2	2	3	E	0	5	2	2
3	Low+1	03/10/2016	09:40	SS	2	E	0	1	2	2	3	E	0	1	2	2
3	Low+2	18/10/2016	10:30	TE	2	E	2	7	1	2	1	E	0	6	1	2
3	Low+3	07/10/2016	13:55	TE	2	E	0	8	2	2	2	E	0	8	2	2
3	Low+4	06/10/2016	14:25	RG	5	E	0	1	1	2	5	E	0	1	1	2
3	Low+5	13/10/2016	10:05	SS	3	E	0	3	2	2	3	E	0	1	2	2
4	High	13/10/2016	11:10	SS	3	E	0	3	2	2	3	E	0	3	2	2
4	High+1	12/10/2016	11:05	SS	3	E	0	5	2	2	3	E	0	7	2	2
4	High+2	11/10/2016	10:40	RG	4	E	0	6	1	2	5	E	0	6	1	2
4	High+3	11/10/2016	10:05	RG	1	NE	0	2	2	2	1	NE	0	2	2	2
4	High+4	07/10/2016	08:30	TE	2	E	0	8	2	2	3	E	0	8	2	2
4	High+5	06/10/2016	09:00	RG	4	SE	0	4	1	2	4	SE	0	4	1	2
4	Low	05/10/2016	09:30	RG	5	E	0	8	1	2	5	E	0	7	1	2
4	Low+1	04/10/2016	10:05	SS	3	E	0	5	2	2	3	E	0	7	2	2
4	Low+2	03/10/2016	10:45	SS	3	E	0	3	2	2	3	E	0	3	2	2
4	Low+3	18/10/2016	11:35	TE	2	SW	0	3	2	2	2	SW	0	5	2	2



CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
4	Low+4	17/10/2016	12:00	SS	3	SW	0	5	2	2	2	SSW	0	3	2	2
4	Low+5	14/10/2016	10:55	SS	3	E	0	7	2	2	3	E	0	7	2	2
5	High	14/10/2016	12:00	SS	3	E	0	7	2	2	3	E	0	7	2	2
5	High+1	13/10/2016	12:15	SS	3	E	0	3	2	2	3	E	0	5	2	2
5	High+2	12/10/2016	12:10	SS	3	E	0	5	2	2	3	E	0	7	2	2
5	High+3	11/10/2016	11:45	RG	5	E	0	8	1	2	5	E	0	8	1	2
5	High+4	11/10/2016	11:10	RG	1	NE	0	2	2	2	1	NE	0	2	2	2
5	High+5	07/10/2016	09:35	TE	3	E	0	8	2	2	3	E	0	8	2	2
5	Low	06/10/2016	10:05	RG	4	SE	0	4	1	2	4	E	0	4	1	2
5	Low+1	05/10/2016	10:35	RG	5	ESE	0	7	1	2	5	ESE	0	7	1	2
5	Low+2	04/10/2016	11:10	SS	3	E	0	7	2	2	3	E	0	5	2	2
5	Low+3	03/10/2016	11:50	SS	3	E	0	5	2	2	3	E	0	3	2	2
5	Low+4	18/10/2016	12:40	TE	2	SW	0	4	2	2	1	N/A	0	5	2	2
5	Low+5	17/10/2016	13:05	SS	2	SSW	0	5	2	2	3	SSW	2	7	2	2
6	High	17/10/2016	14:10	SS	3	SSW	4	7	2	2	2	SSW	2	7	2	2
6	High+1	14/10/2016	13:05	SS	3	E	0	7	2	2	3	E	0	7	2	2
6	High+2	13/10/2016	13:20	SS	3	E	0	5	2	2	3	E	0	5	2	2
6	High+3	12/10/2016	13:15	SS	4	E	0	7	2	2	3	E	0	7	2	2
6	High+4	11/10/2016	12:50	RG	5	E	0	7	1	2	5	E	0	7	1	2
6	High+5	11/10/2016	12:15	RG	2	NE	0	3	2	2	2	NE	0	4	1	2
6	Low	07/10/2016	10:40	TE	2	E	0	8	2	2						
6	Low+1	06/10/2016	11:10	RG	4	E	0	3	1	2	4	E	0	3	1	2
6	Low+2	05/10/2016	11:40	RG	5	SE	0	7	1	2	5	SE	0	7	1	2
6	Low+3	04/10/2016	12:15	SS	3	E	0	5	2	2	3	E	0	7	2	2
6	Low+4	03/10/2016	12:55	SS	3	E	0	3	2	2	4	E	0	3	2	2
6	Low+5	18/10/2016	13:40	TE	2	SW	0	6	2	2	2	SW	0	7	2	2
7	High	18/10/2016	14:50	TE	2	SW	0	7	2	2	2	WSW	0	7	2	2
7	High+1	17/10/2016	15:15	SS	3	SSE	2	7	2	2	2	SSE	0	5	2	2
7	High+2	14/10/2016	14:10	SS	3	E	0	7	2	2	3	E	2	7	2	2
7	High+3	13/10/2016	14:25	SS	3	E	0	5	2	2	3	E	0	7	2	2



CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
7	High+4	12/10/2016	14:20	SS	3	E	0	7	2	2	2	E	0	7	2	2
7	High+5	11/10/2016	13:55	RG	5	E	0	8	1	2	5	E	0	8	1	2
7	Low	11/10/2016	13:20	RG	2	NE	0	7	1	2	2	E	0	8	1	2
7	Low+1	07/10/2016	11:45	TE	2	E	0	8	2	2	2	E	0	8	2	2
7	Low+2	06/10/2016	12:15	RG	5	E	0	2	1	2	5	E	0	1	1	2
7	Low+3	05/10/2016	12:45	RG	5	SE	0	7	1	2	4	SE	0	7	1	2
7	Low+4	04/10/2016	13:20	SS	3	E	0	7	2	2	3	E	0	7	2	2
7	Low+5	03/10/2016	14:00	SS	4	E	0	3	2	2	3	E	0	3	2	2

November 2016

CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
1	High	11/11/2016	09:35	SS	2	E	0	5	2	2	2	E	0	7	2	2
1	High+1	10/11/2016	09:00	SS	2	NW	0	5	2	2	2	NW	0	7	2	2
1	High+2	22/11/2016	10:35	SS	3	NNW	0	7	2	2	3	NNW	0	5	2	2
1	High+3	23/11/2016	10:40	RDG	1	NE	0	0	N/A	2	1	NE	0	0	N/A	2
1	High+4	07/11/2016	08:45	TE	1	N/A	0	1	2	2	1	N/A	0	1	2	2
1	High+5	08/11/2016	10:45	RDG	3	E	0	8	2	2	3	E	0	8	2	2
1	Low	04/11/2016	08:40	SS	2	S	0	8	2	2	2	S	0	7	2	2
1	Low+1	02/11/2016	08:45	RDG	2	NW	0	7	1	2	2	NW	0	8	1	2
1	Low+2	01/11/2016	09:20	RDG	0	N/A	0	0	N/A	2	1	NW	0	0	N/A	2
1	Low+3	03/11/2016	11:25	SS	2	S	0	8	2	2	3	S	0	8	2	2
1	Low+4	14/11/2016	07:53	TE	3	WSW	0	8	2	2	3	WSW	0	8	2	2
1	Low+5	15/11/2016	11:45	RDG	3	W	0	4	2	2	3	W	0	3	2	2
3	High	15/11/2016	12:50	RDG	4	W	0	6	2	2	5	W	0	7	2	2
3	High+1	11/11/2016	10:40	SS	2	E	0	7	2	2	2	E	0	7	2	2



CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
3	High+2	10/11/2016	10:05	SS	2	NW	0	5	2	2	3	NW	0	5	2	2
3	High+3	09/11/2016	09:50	SS	2	NE	2	8	1-2	2	2	NE	0	8	1-2	2
3	High+4	23/11/2016	11:45	RDG	1	NE	0	0	N/A	2	1	NE	0	0	N/A	2
3	High+5	07/11/2016	10:20	TE	1	W	0	1	2	2						
3	Low	08/11/2016	11:50	RDG	4	E	0	8	2	2	4	E	0	8	2	2
3	Low+1	04/11/2016	09:45	SS	2	S	0	7	2	2	2	SE	0	7	2	2
3	Low+2	02/11/2016	09:50	RDG	2	NW	0	8	1	2	2	NW	0	8	1	2
3	Low+3	01/11/2016	10:25	RDG	1	NW	0	0	N/A	2	2	NW	0	0	N/A	2
3	Low+4	03/11/2016	12:30	RDG	3	S	0	8	2	2	3	SW	2	8	2	2
3	Low+5	14/11/2016	11:05	TE	4	W	0	8	2	2	4	W	0	8	1	2
4	High	14/11/2016	12:10	TE	3	W	0	8	1	2	3	W	0	8	1	2
4	High+1	15/11/2016	13:55	RDG	5	W	3	7	2	2	4	W	3	7	1	2
4	High+2	11/11/2016	11:45	SS	2	E	0	7	2	2	2	E	0	7	2	2
4	High+3	10/11/2016	11:10	SS	2	NW	0	3	2	2	2	NW	0	1	2	2
4	High+4	09/11/2016	10:55	SS	2	NE	0	8	1-2	2	2	NE	0	7	2	2
4	High+5	15/11/2016	12:50	RDG	1	NE	0	0	N/A	2	1	NE	0	0	N/A	2
4	Low	07/11/2016	10:55	TE	1	W	0	1	2	2	2	W	0	1	2	2
4	Low+1	08/11/2016	12:55	RDG	2	E	0	8	2	2	2	E	0	8	2	2
4	Low+2	04/11/2016	10:50	SS	2	SE	0	5	2	2	2	SE	0	7	2	2
4	Low+3	02/11/2016	10:55	RDG	2	NW	0	7	1	2	2	NW	0	6	1	2
4	Low+4	01/11/2016	11:30	RDG	3	NW	0	0	N/A	2	3	NW	0	1	2	2
4	Low+5	03/11/2016	13:35	SS	3	S	2	8	2	2	3	S	0	8	2	2
5	High	03/11/2016	14:40	SS	3	S	2	8	1-2	2	3	S	3	8	1-2	2
5	High+1	14/11/2016	04:53	TE	3	W	0	8	1	2	3	W	0	8	1	2
5	High+2	15/11/2016	15:00	RDG	6	W	0	5	2	2	6	W	1	6	2	2
5	High+3	11/11/2016	12:50	SS	2	E	0	7	2	2	2	E	0	7	2	2



CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
5	High+4	10/11/2016	12:15	SS	2	NW	0	1	2	2	2	NW	0	1	2	2
5	High+5	09/11/2016	12:00	SS	2	NE	0	7	2	2	2	NE	0	8	2	2
5	Low	23/11/2016	13:55	RDG	1	NE	0	0	N/A	2	1	NE	0	1	2	2
5	Low+1	07/11/2016	12:00	TE	2	W	0	1	2	2	2	W	0	1	2	2
5	Low+2	08/11/2016	14:00	RDG	2	E	0	8	2	2	3	E	1	8	1	2
5	Low+3	04/11/2016	11:55	SS	2	SE	0	5	2	2	2	SE	0	5	2	2
5	Low+4	02/11/2016	12:00	RDG	2	NW	0	7	2	2	2	NW	0	5	2	2
5	Low+5	01/11/2016	12:35	RDG		NW	0	1	2	2		NW	0	1	2	2
6	High	01/11/2016	13:40	RDG	3	NW	0	1	2	2	3	NW	0	1	2	2
6	High+1	22/11/2016	09:30	SS	2	NNW	0	7	2	2	3	NNW	0	7	2	2
6	High+2	14/11/2016	14:20	TE	2	W	0	8	1	2	2	W	0	8	1	2
6	High+3	22/11/2016	11:40	SS	3	NNW	0	3	2	2	3	NNW	0	5	2	2
6	High+4	11/11/2016	13:55	SS	2	E	0	7	2	2	2	E	0	8	2	2
6	High+5	10/11/2016	13:20	SS	2	NW	0	1	2	2	2	NW	0	1	2	2
6	Low	09/11/2016	13:05	SS	2	NE	0	8	2	2	2	NE	0	8	2	2
6	Low+1	03/11/2016	09:15	RDG	2	S	0	7	2	2	2	SW	0	8	2	2
6	Low+2	07/11/2016	13:05	TE	2	WNW	0	3	2	2	1	WNW	0	4	2	2
6	Low+3	15/11/2016	09:35	RDG	2	W	0	5	2	2	3	W	0	6	2	2
6	Low+4	04/11/2016	13:00	SS	2	SE	0	5	2	2	2	SE	0	3	2	2
6	Low+5	02/11/2016	13:05	RDG	3	NW	0	7	2	2	3	NW	0	7	2	2
7	High	02/11/2016	14:10	RDG	2	NW	0	6	2	2	2	NW	0	6	2	2
7	High+1	01/11/2016	14:45	RDG	3	NW	0	1	2	2	3	NW	0	1	2	2
7	High+2	23/11/2016	09:35	RDG	1	NE	0	0	N/A	2	1	NE	0	0	N/A	2
7	High+3	22/11/2016	12:15	SS	3	NNW	0	5	2	2	3	NNW	0	7	2	2
7	High+4	08/11/2016	09:40	RDG	2	E	0	8	2	2	3	E	0	8	2	2
7	High+5	22/11/2016	13:55	SS	3	NNW	0	5	2	2	2	NNW	0	5	2	2



CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
7	Low	10/11/2016	14:25	SS	2	NW	0	1	2	2	2	NW	0	1	2	2
7	Low+1	09/11/2016	14:10	SS	2	NE	0	8	2	2	2	NE	0	8	2	2
7	Low+2	03/11/2016	10:20	SS	2	S	2	8	2	2	2	S	0	7	2	2
7	Low+3	07/11/2016	14:05	TE	1	N/A	0	6	2	2	1	N/A	0	6	2	2
7	Low+4	15/11/2016	10:40	RDG	3	W	0	3	2	2	3	W	0	3	2	2
7	Low+5	04/11/2016	14:05	SS	2	S	0	3	2	2	2	S	0	3	2	2

December 2016

CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
1	High	15/12/2016	13:20	RDG	2	S	1	8	0	2	2	S	1	8	0	2
1	High+1	23/12/2016	09:40	SS	6	S	3	8	1	2	6	SSW	4	8	1	2
1	High+2	23/12/2016	10:15	SS	6	SSW	4	8	1	2	6	SSW	4	8	1	2
1	High+3	08/12/2016	09:20	SS	2	W	0	8	2	2	3	W	0	7	2	2
1	High+4	21/12/2016	09:45	RDG	5	SW	0	1	2	2	5	SW	0	7	2	2
1	High+5	06/12/2016	09:30	RDG	1	W	0	8	0	2	2	W	2	8	0	2
1	Low	05/12/2016	09:45	TE	1	N/A	0	7	1	2	1	N/A	0	7	1	2
1	Low+1	21/12/2016	13:00	RDG	4	SW	3	4	2	2	4	W	3	7	0	2
1	Low+2	21/12/2016	14:05	RDG	5	W	3	8	0	2	4	W	3	8	0	2
1	Low+3	02/12/2016	11:00	SS	2	N	0	7	2	2	2	N	0	7	2	2
1	Low+4	13/12/2016	09:40	SS	3	E	0	8	2	2	3	E	0	8	2	2
1	Low+5	12/12/2016	09:50	TE	2	SSW	0	7	2	2	2	SSW	0	8	2	2
3	High	12/12/2016	10:55	TE	1	S	0	8	2	2	1	S	0	8	2	2
3	High+1	15/12/2016	14:25	RDG	2	SE	1	8	1	2	3	SE	1	8	1	2
3	High+2	09/12/2016	09:20	SS	3	SSW	0	8	1-2	2	4	SSW	0	8	1-2	2



CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
3	High+3	22/12/2016	09:45	SS	4	WSW	2	7	2	2	5	WSW	4	7	2	2
3	High+4	08/12/2016	10:25	SS	2	W	0	7	2	2	2	W	0	7	2	2
3	High+5	07/12/2016	10:20	RDG	3	SW	1	8	0	2	3	SW	2	8	0	1
3	Low	06/12/2016	10:35	RDG	1	W	0	8	0	1	1	W	1	8	0	1
3	Low+1	05/12/2016	10:50	TE	1	N/A	0	8	0	1	1	N/A	0	8	0	0
3	Low+2	01/12/2016	09:25	SS	3	WNW	0	7	2	2	4	WNW	0	7	2	2
3	Low+3	14/12/2016	09:20	RDG	3	S	1	8	0	2	3	S	2	8	0	1
3	Low+4	02/12/2016	12:05	SS	2	N	0	7	2	2	3	NE	0	7	2	2
3	Low+5	13/12/2016	10:45	SS	3	E	2	8	1 - 2	2	3	E	2	7	1 - 2	2
4	High	13/12/2016	11:50	SS	3	E	0	7	2	2	3	E	0	7	2	2
4	High+1	12/12/2016	12:50	TE	1	SSW	0	8	2	2	2	SSW	0	8	2	2
4	High+2	23/12/2016	09:55	RDG	6	SSW	3	8	0	1	6	SSW	4	8	0	1
4	High+3	09/12/2016	10:25	SS	3	SSW	0	8	1 - 2	2	3	SSW	0	8	2	2
4	High+4	22/12/2016	10:50	SS	5	WSW	3	7	2	2	4	WSW	3	7	2	2
4	High+5	08/12/2016	11:30	SS	2	W	0	8	2	2	2	W	0	7	2	2
4	Low	07/12/2016	11:25	RDG	3	SW	1	8	0	1	3	SW	0	8	0	2
4	Low+1	06/12/2016	11:40	RDG	1	W	1	8	0	1	1	W	1	8	0	1
4	Low+2	05/12/2016	11:55	TE	1	N/A	0	8	0	0	1	N/A	0	8	0	1
4	Low+3	01/12/2016	10:30	SS	3	WNW	0	7	2	2	3	WNW	0	5	2	2
4	Low+4	14/12/2016	10:25	RDG	4	S	4	8	0	0	4	S	1	8	0	1
4	Low+5	02/12/2016	13:10	SS	2	NE	0	7	2	2	2	NE	0	5	2	2
5	High	02/12/2016	14:15	SS	2	NE	0	5	2	2	2	NE	0	5	2	2
5	High+1	13/12/2016	12:55	SS	3	E	0	7	2	2	2	E	0	5	2	2
5	High+2	12/12/2016	13:05	TE	1	N/A	0	8	2	2	1	N/A	0	8	2	2
5	High+3	23/12/2016	11:00	RDG	7	SSW	4	8	0	1	8	SSW	4	8	0	1
5	High+4	09/12/2016	11:30	SS	3	SSW	0	8	2	2	3	SSW	0	8	2	2



CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
5	High+5	22/12/2016	11:55	SS	4	WSW	3	7	2	2	3	WSW	0	7	2	2
5	Low	08/12/2016	12:35	SS	2	W	0	7	2	2	2	W	0	7	2	2
5	Low+1	07/12/2016	12:30	RDG	3	SSW	0	8	0	2	5	W	0	8	0	2
5	Low+2	06/12/2016	12:45	RDG	1	W	1	8	0	1	1	W	1	8	0	1
5	Low+3	05/12/2016	13:00	TE	1	N/A	0	8	0	0	1	N/A	0	8	0	0
5	Low+4	01/12/2016	11:35	SS	3	WNW	0	7	2	2	2	WNW	0	5	2	2
5	Low+5	14/12/2016	11:30	RDG	3	S	0	8	1	2	4	S	3	8	0	1
6	High	14/12/2016	12:35	RDG	4	S	4	8	0	0	3	SW	4	8	0	0
6	High+1	12/12/2016	09:50	SS	2	SSE	0	7	2	2	2	SSE	0	7	2	2
6	High+2	13/12/2016	14:00	SS	2	E	0	5	2	2	3	E	0	7	2	2
6	High+3	12/12/2016	14:10	TE	1	N/A	0	8	2	2	1	N/A	0	8	2	2
6	High+4	23/12/2016	12:05	RDG	7	SW	4	8	0	1	8	SW	4	8	0	1
6	High+5	09/12/2016	12:35	SS	3	SSW	0	8	2	2	3	SSW	0	8	2	2
6	Low	22/12/2016	13:00	SS	4	WSW	0	7	2	2	5	WSW	4	8	1	2
6	Low+1	08/12/2016	13:40	SS	2	W	0	7	2	2	2	W	0	5	2	2
6	Low+2	07/12/2016	13:35	RDG	5	W	1	8	0	2	4	W	0	8	0	2
6	Low+3	06/12/2016	13:50	RDG	1	W	0	8	0	1	1	W	1	8	0	1
6	Low+4	05/12/2016	14:05	TE	1	N/A	0	8	0	0	1	N/A	0	8	0	0
6	Low+5	01/12/2016	12:40	SS	2	WNW	0	3	2	2	2	WNW	0	5	2	2
7	High	01/12/2016	13:45	SS	2	WNW	0	7	2	2	2	WNW	0	5	2	2
7	High+1	14/12/2016	13:40	RDG	1	SW	1	8	2	2	2	SW	4	8	2	1
7	High+2	12/12/2016	10:55	SS	2	SSE	0	7	2	2	2	SSE	0	7	2	2
7	High+3	12/12/2016	12:00	SS	2	SSE	0	7	2	2	2	SSE	0	7	2	2
7	High+4	12/12/2016	13:05	SS	2	SSE	0	7	2	2	2	SSE	0	7	2	2
7	High+5	23/12/2016	13:10	RDG	8	SW	3	8	0	2	7	SW	3	8	0	2
7	Low	09/12/2016	13:40	SS	2	SSW	0	8	2	2	3	SSW	0	8	2	2



CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
7	Low+1	22/12/2016	14:05	SS	3	WSW	0	7	2	2	4	WSW	3	8	1	2
7	Low+2	02/12/2016	09:55	SS	2	N	0	7	2	2	2	N	2	7	2	2
7	Low+3	15/12/2016	10:05	RDG	3	SE	0	8	1	2	3	SE	0	8	1	2
7	Low+4	15/12/2016	11:10	RDG	4	SE	1	8	1	2	4	SE	2	8	0	2
7	Low+5	15/12/2016	12:15	RDG	4	S	3	8	0	2	2	S	2	8	0	2

January 2017

CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
1	High	09/01/2017	09:30	RDG	3	W	0	2	2	2	3	W	0	3	2	2
1	High+1	23/01/2017	10:15	KD	2	E	0	4	0	1	2	E	0	6	0	1
1	High+2	23/01/2017	11:20	KD	2	E	0	8	0	1	2	E	0	8	0	1
1	High+3	24/01/2017	13:20	KD	2	SW	0	1	2	2	2	SW	1	2	2	0
1	High+4	24/01/2017	14:25	KD	3	SW	0	8	2	2	3	SW	0	8	2	2
1	High+5	18/01/2017	09:15	KD	2	W	0	8	2	2	2	W	0	8	2	2
1	Low	16/01/2017	09:00	KD	2	W	0	7	1	2	2	W	0	7	1	2
1	Low+1	20/01/2017	13:05	SS	2	SSW	0	8	1-2	2	3	SSW	0	8	1-2	2
1	Low+2	18/01/2017	12:30	SS	2	WSW	0	8	2	2	2	WSW	0	8	2	2
1	Low+3	12/01/2017	09:10	KD	3	NW	0	5	1	2	3	NW	0	6	1	2
1	Low+4	11/01/2017	09:25	RDG	5	NW	3	6	2	2	6	NW	2	7	0	2
1	Low+5	09/01/2017	09:35	RDG	4	W	0	7	2	2	4	W	0	7	2	2
3	High	09/01/2017	10:40	RDG	5	W	0	7	1	2	5	W	0	8	1	2
3	High+1	09/01/2017	13:35	RDG	4	W	1	6	2	2	3	W	3	7	1	2
3	High+2	24/01/2017	12:15	KD	2	W	0	8	2	2	3	W	0	8	2	2
3	High+3	23/01/2017	12:25	KD	0	n/a	0	8	1	2	2	W	0	8	1	2



CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
3	High+4	19/01/2017	08:55	SS	3	WSW	0	8	2	2	3	WSW	0	8	2	2
3	High+5	23/01/2017	14:35	KD	1	W	0	8	1	2	1	W	0	8	1	2
3	Low	18/01/2017	10:20	KD	3	W	0	8	2	2	3	W	0	8	2	2
3	Low+1	16/01/2017	10:05	KD	3	W	0	8	1	2	2	W	0	7	1	2
3	Low+2	18/01/2017	12:30	SS	2	WSW	0	8	2	2	2	WSW	0	8	2	2
3	Low+3	13/01/2017	09:55	KD	5	NW	0	5	2	2	4	NW	0	4	2	2
3	Low+4	12/01/2017	10:15	KD	4	NW	0	7	1	2	3	NW	0	7	1	2
3	Low+5	11/01/2017	10:30	RDG	7	NW	3	8	1	2	8	NW	3	7	1	2
4	High	11/01/2017	11:35	RDG	8	NW	3	7	1	2	7	NW	3	6	1	2
4	High+1	10/01/2017	11:45	RDG	4	W	1	8	1	2	3	W	1	8	1	2
4	High+2	09/01/2017	11:40	RDG	4	W	3	7	0-1	2	4	W	4	8	0	2
4	High+3	20/01/2017	08:45	SS	2	SSW	0	8	1-2	2	2	SSW	0	8	1-2	2
4	High+4	23/01/2017	13:30	KD	2	W	0	8	1	2	1	W	0	8	1	2
4	High+5	19/01/2017	10:00	SS	3	WSW	0	8	2	2	3	WSW	0	8	2	2
4	Low	17/01/2017	09:40	SS	2	W	0	8	1	2	2	W	2	8	1	2
4	Low+1	18/01/2017	11:25	KD	3	W	0	8	2	2	2	W	0	8	2	2
4	Low+2	16/01/2017	11:10	KD	2	W	0	7	1	2	2	W	1	8	1	2
4	Low+3	18/01/2017	13:35	SS	3	WSW	0	8	2	2	3	WSW	0	8	2	2
4	Low+4	13/01/2017	11:00	KD	3	NW	0	6	2	2	3	NW	0	6	2	2
4	Low+5	12/01/2017	11:20	SS	4	NW	0	5	1	2	3	NW	0	6	1	2
5	High	12/01/2017	12:25	KD	3	NW	0	6	1	2	2	NW	0	7	1	2
5	High+1	11/01/2017	12:40	RDG	7	NW	3	7	1	2	7	NW	3	8	0	2
5	High+2	09/01/2017	12:50	RDG	4	W	2	8	1	2	5	W	2	8	0	2
5	High+3	09/01/2017	12:45	RDG	3	W	3	8	0	2	5	W	4	8	0	1
5	High+4	20/01/2017	09:50	SS	2	SSW	0	8	2	2	2	SSW	0	8	2	2
5	High+5	18/01/2017	09:15	SS	2	WSW	0	8	2	2	2	WSW	0	8	2	2



CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
5	Low	19/01/2017	11:05	SS	3	WSW	0	8	2	2	3	WSW	0	8	2	2
5	Low+1	17/01/2017	10:45	SS	2	W	0	7	1	2	2	W	0	8	1	1/2
5	Low+2	18/01/2017	12:30	KD	2	W	0	8	2	2	2	W	0	8	2	2
5	Low+3	16/01/2017	12:15	KD	1	W	0	8	1	2	2	W	0	7	1	2
5	Low+4	17/01/2017	14:00	SS	2	W	0	7	1-2	2	2	W	0	8	1-2	2
5	Low+5	13/01/2017	12:05	KD	3	NW	0	6	2	2	3	NW	0	7	2	2
6	High	13/01/2017	13:10	KD	3	NW	0	6	2	2	3	NW	0	7	2	2
6	High+1	12/01/2017	13:30	KD	3	NW	2	8	1	2	3	NW	0	4	2	2
6	High+2	11/01/2017	13:45	RDG	7	NW	0	6	2	2	8	NW	3	6	2	2
6	High+3	10/01/2017	13:55	RDG	4	W	3	8	0	1	4	W	0	7	1	2
6	High+4	09/01/2017	13:50	RDG	4-5	W	2	7	2	2	4	W	2	7	2	2
6	High+5	20/01/2017	10:55	SS	2	SSW	0	8	1-2	2	2	SSW	0	8	1-2	2
6	Low	18/01/2017	10:20	SS	2	WSW	0	8	2	2	2	WSW	0	8	2	2
6	Low+1	19/01/2017	12:10	SS	3	WSW	0	8	2	2	3	WSW	0	8	2	2
6	Low+2	17/01/2017	11:50	SS	2	W	0	7	1	2	2	W	0	5	1	2
6	Low+3	18/01/2017	13:35	KD	3	W	0	8	2	2	3	W	0	8	2	2
6	Low+4	16/01/2017	13:20	KD	3	W	0	8	1	2	2	W	0	8	1	2
6	Low+5	17/01/2017	15:05	SS	2	W	1	8	1	2	2	W	1	8	1	2
7	High	23/01/2017	09:10	KD	0	n/a	0	2	0	1	0	n/a	0	2	0	1
7	High+1	13/01/2017	14:15	KD	4	NW	0	6	2	2	4	NW	0	6	2	2
7	High+2	12/01/2017	14:35	KD	4	NW	Heavy snow	4	0	0	3	NW	0	6	2	2
7	High+3	11/01/2017	14:50	RDG	8	NW	0	4	2	2	8	NW	0	4	2	2
7	High+4	19/01/2017	08:55	KD	1	W	0	8	2	2	1	W	0	8	2	2
7	High+5	09/01/2017	14:55	RDG	4	W	0	4	2	2	4	W	0	5	2	2
7	Low	20/01/2017	12:00	SS	2	SSW	0	8	1-2	2	2	SSW	0	8	1-2	2
7	Low+1	18/01/2017	11:25	SS	2	WSW	0	8	2	2	3	WSW	0	8	2	2



CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
7	Low+2	19/01/2017	13:15	SS	2	WSW	0	8	2	2	2	WSW	0	8	2	2
7	Low+3	17/01/2017	12:55	SS	2	W	0	5	1-2	2	2	W	0	7	1-2	2
7	Low+4	18/01/2017	14:40	KD	3	W	0	8	2	2	3	W	0	8	2	2
7	Low+5	16/01/2017	14:25	KD	1	W	0	8	1	2	1	W	0	8	1	2

February 2017

CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
1	High	07/02/2017	09:00	KD	2	SW	2	8	1	2	2	SW	2	8	1	2
1	High+1	21/02/2017	09:15	SS	2	W	0	7	2	2	2	W	0	8	2	2
1	High+2	20/02/2017	09:15 (09:00)	KD	4	W	3	8	1	1	3	W	0	8	1	2
1	High+3	06/02/2017	10:35	KD	3	SE	0	8	2	2	3	SE	0	8	2	2
1	High+4	21/02/2017	12:45	RDG	4	SSW	1	8	1	2	4	SSW	1	8	1	2
1	High+5	21/02/2017	13:50	RDG	3	S	1	8	1	2	3	S	1	8	1	2
1	Low	01/02/2017	09:20	KD	3	SE	0	7	1	2	3	SE	0	8	1	2
1	Low+1	14/02/2017	09:40	SS	4	E	0	3	2	2	4	E	0	1	2	2
1	Low+2	13/02/2017	09:55	SS	6	E	0	8	2	2	6	E	0	8	2	2
1	Low+3	10/02/2017	09:00	SS	2	ESE	0	7	2	2	2	ESE	0	7	2	2
1	Low+4	03/02/2017	15:00	KD	3	SSE	2	8	1	2	2	SSE	0	8	1	2
1	Low+5	08/02/2017	09:20	KD	2	S	0	8	1	2	2	S	0	8	2	2
3	High	08/02/2017	10:35	KD	2	S	0	8	2	2	2	S	0	8	2	2
3	High+1	07/02/2017	10:05	KD	2	SW	3	8	1	2	2	SW	3	8	1	2
3	High+2	21/02/2017	10:20	SS	3	SSW	0	8	2	2	4	SSW	0	8	2	2



CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
3	High+3	20/02/2017	10:20 (10:05)	KD	5	W	0	8	1	2	6	W	0	7	2	2
3	High+4	06/02/2017	11:40	KD	4	SE	0	8	2	2	4	SE	0	8	2	2
3	High+5	03/02/2017	09:45	KD	4	SSE	0	7	2	2	4	SSE	0	7	2	2
3	Low	02/02/2017	09:50	KD	3	SE	2	8	1	2	3	SE	3	8	1	2
3	Low+1	01/02/2017	10:25	KD	4	SE	0	8	1	2	4	SE	0	8	1	2
3	Low+2	14/02/2017	10:45	SS	5	E	0	1	2	2	5	E	0	1	2	2
3	Low+3	13/02/2017	11:00	SS	6	E	0	8	2	2	5	E	0	7	2	2
3	Low+4	10/02/2017	10:05	SS	2	ESE	0	7	2	2	3	ESE	0	7	2	2
3	Low+5	09/02/2017	10:20	SS	4	E	0	7	2	2	3	E	0	7	2	2
4	High	09/02/2017	11:25	SS	3	E	0	7	2	2	3	E	0	7	2	2
4	High+1	08/02/2017	11:30	KD	2	S	0	8	2	2	2	S	0	8	2	2
4	High+2	07/02/2017	11:10	KD	2	SW	3	8	1	2	2	SW	3	8	1	2
4	High+3	21/02/2017	11:25	SS	4	SSW	0	8	2	2	4	SSW	0	8	2	2
4	High+4	20/02/2017	11:10	KD	5	W	0	5	2	2	5	W	0	5	2	2
4	High+5	06/02/2017	12:45	KD	4	SE	0	8	2	2	4	SE	0	8	2	2
4	Low	03/02/2017	11:00	KD	4	SSE	0	6	2	2	3	SSE	0	4	2	2
4	Low+1	02/02/2017	10:55	KD	4	SE	0	8	1	2	4	SE	2	8	2	2
4	Low+2	01/02/2017	11:20	KD	4	SE	0	8	2	2	4	SE	0	8	2	2
4	Low+3	14/02/2017	11:50	SS	5	E	0	1	2	2	4	E	0	1	2	2
4	Low+4	13/02/2017	12:05	SS	5	E	0	7	2	2	5	E	0	7	2	2
4	Low+5	10/02/2017	11:10	SS	3	ESE	0	7	2	2	3	ESE	0	7	2	2
5	High	10/02/2017	12:15	SS	2	ESE	0	7	2	2	2	ESE	0	5	2	2
5	High+1	09/02/2017	12:30	SS	3	E	0	7	2	2	4	E	0	7	2	2
5	High+2	08/02/2017	12:35	KD	2	S	0	8	2	2	2	S	0	8	2	2
5	High+3	07/02/2017	12:15	KD	2	SW	4	8	1	2	2	W	4	8	1	2
5	High+4	21/02/2017	12:30	SS	3	SW	2	8	1	2	4	SW	2	8	1	2



CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
5	High+5	20/02/2017	12:15	KD	6	W	0	5	2	2	6	W	0	6	2	2
5	Low	06/02/2017	13:50	KD	4	SE	0	8	2	2	4	SE	0	8	2	2
5	Low+1	03/02/2017	12:00	KD	4	SSE	0	4	2	2	4	SSE	0	5	2	2
5	Low+2	02/02/2017	12:00	KD	4	SE	0	8	2	2	4	SE	2	8	2	2
5	Low+3	01/02/2017	12:25	KD	3	SE	0	8	2	2	3	SE	0	8	2	2
5	Low+4	13/02/2017	12:55	SS	4	E	0	1	2	2	4	E	0	1	2	2
5	Low+5	13/02/2017	13:10	SS	6	E	0	7	2	2	6	E	0	7	2	2
6	High	13/02/2017	14:15	SS	6	E	0	7	2	2	6	E	0	7	2	2
6	High+1	10/02/2017	13:20	SS	2	ESE	2	7	2	2	2	ESE	0	7	2	2
6	High+2	09/02/2017	13:35	SS	4	E	0	7	2	2	4	E	0	7	2	2
6	High+3	08/02/2017	13:40	KD	3	S	0	8	2	2	3	S	0	8	2	2
6	High+4	07/02/2017	13:20	KD	1	W	4	8	1	2	1	W	4	8	1	2
6	High+5	21/02/2017	13:35	SS	4	SW	2	8	1/2	2	3	SW	0	8	1/2	2
6	Low	20/02/2017	13:20	KD	5	W	0	7	2	2	5	W	0	7	2	2
6	Low+1	06/02/2017	14:55	KD	4	S	2	8	2	2	4	SW	2	8	2	2
6	Low+2	03/02/2017	12:50	KD	3	SSE	0	5	2	2	3	SSE	0	7	2	2
6	Low+3	02/02/2017	13:05	KD	4	SE	2	8	2	2	4	SE	2	8	2	2
6	Low+4	01/02/2017	13:30	KD	3	SE	0	8	2	2	3	SE	0	8	2	2
6	Low+5	14/02/2017	14:00	SS	4	E	0	1	2	2	4	E	0	3	2	2
7	High	14/02/2017	15:05	SS	4	E	0	3	2	2	3	E	0	3	2	2
7	High+1	21/02/2017	09:30	RDG	2	S	0	8	1	2	3	S	0	8	1	2
7	High+2	06/02/2017	09:30	KD	3	SE	0	8	2	2	3	SE	0	8	2	2
7	High+3	09/02/2017	14:40	SS	3	E	0	7	2	2	3	E	0	8	2	2
7	High+4	08/02/2017	14:45	KD	3	S	0	8	2	2	3	S	0	8	2	2
7	High+5	07/02/2017	14:25	KD	2	W	4	8	1	2	2	W	2	8	1	2
7	Low	21/02/2017	14:40	SS	4	SW	0	8	1/2	2	4	SW	2	8	1/2	2



CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
7	Low+1	20/02/2017	14:25	KD	6	W	0	6	2	2	6	W	0	7	2	2
7	Low+2	27/02/2017	09:10	SS	2	S	0	3	2	2	2	SSW	0	5	2	2
7	Low+3	03/02/2017	13:55	KD	3	S	0	7	2	0	3	S	0	7	2	0
7	Low+4	02/02/2017	14:10	KD	4	SE	8	1	2	0	4	SE	0	8	1	2
7	Low+5	01/02/2017	14:35	KD	3	SE	0	4	2	2	4	SE	0	6	2	2



March 2017

CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
1	High	23/03/2017	08:45	KD	2	W	0	8	2	2	2	W	0	8	2	2
1	High+1	09/03/2017	11:15	SS	3	NW	0	3	2	2	3	NW	0	5	2	2
1	High+2	08/03/2017	10:50	SS	5	SW	0	8	2	2	5	SW	2	8	2	2
1	High+3	07/03/2017	10:20	SS	3	S	0	5	2	2	2	SSW	0	7	2	2
1	High+4	06/03/2017	10:00	SS	2	SE	0	5	2	2	2	SE	0	7	2	2
1	High+5	24/03/2017	15:10	KD	2	SW	0	8	2	2	2	SW	0	7	2	2
1	Low	02/03/2017	09:00 (08:50)	KD	5	W	0	4	2	2	4	W	0	4	2	2
1	Low+1	20/03/2017	12:20	KD	5	W	0	6	2	2	4	W	0	2	2	2
1	Low+2	01/03/2017	10:15	KD	0	n/a	0	4	2	2	1	W	0	2	2	2
1	Low+3	13/03/2017	10:05	KD	3	W	0	7	2	2	3	W	0	7	2	2
1	Low+4	10/03/2017	09:00	SS	2	E	2	8	1	2	2	E	2	8	1	2
1	Low+5	03/03/2017	15:00	KD	3	SE	0	8	2	2	3	SE	0	8	2	2
3	High	24/03/2017	10:00 (09:45)	KD	1	SE	0	7	2	2	1	SE	0	8	2	2
3	High+1	23/03/2017	09:50	KD	3	SE	0	8	2	2	3	SE	0	8	2	2
3	High+2	09/03/2017	12:20	SS	4	NW	0	5	2	2	3	NW	0	3	2	2
3	High+3	08/03/2017	11:55	SS	5	SW	2	8	2	2	5-6	SW	0	8	2	2
3	High+4	07/03/2017	11:25	SS	3	SSW	0	7	2	2	3	SW	0	7	2	2
3	High+5	06/03/2017	11:05	SS	2	E	0	7	2	2	2	N	0	7	2	2
3	Low	03/03/2017	09:35	KD	1	W	0	8	1	1	1	W	0	8	1	2
3	Low+1	02/03/2017	10:15	KD	5	W	0	4	2	2	5	W	3	7	1	2
3	Low+2	20/03/2017	13:25	KD	4	W	0	3	2	2	6	W	3	8	1	2
3	Low+3	01/03/2017	11:30	KD	3	W	0	4	2	2	3	W	0	4	2	2
3	Low+4	13/03/2017	11:10	KD	4	W	0	8	2	2	4	W	0	8	2	2



CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
3	Low+5	10/03/2017	10:05	SS	2	E	2	8	1	2	2	E	0	8	1	2
4	High	10/03/2017	11:10	SS	2	E	2	8	1	2	2	E	0	8	1	2
4	High+1	24/03/2017	10:50	KD	1	W	0	7	2	2	1	W	0	7	2	2
4	High+2	23/03/2017	10:55	KD	3	SE	0	7	2	2	3	SE	0	7	2	2
4	High+3	09/03/2017	13:25	SS	3	NW	0	3	2	2	3	NW	0	3	2	2
4	High+4	08/03/2017	13:00	SS	6	SW	2	8	2	2	6	SW	0	7	2	2
4	High+5	07/03/2017	12:30	SS	3	SW	0	7	2	2	2	SW	0	7	2	2
4	Low	06/03/2017	12:10	SS	2	N	0	7	2	2	2	NW	0	5	2	2
4	Low+1	03/03/2017	10:40	KD	0	N/A	0	6	1	2	1	W	0	5	2	2
4	Low+2	02/03/2017	11:00	KD	4	W	0	6	2	2	5	W	2	6	2	2
4	Low+3	20/03/2017	14:30	KD	5	W	0	4	2	2	5	W	2	6	2	2
4	Low+4	01/03/2017	12:25	KD	3	W	0	4	2	2	3	W	0	4	2	2
4	Low+5	13/03/2017	12:15	KD	4	W	0	6	2	2	4	W	0	5	2	2
5	High	13/03/2017	13:20	KD	3	W	0	7	2	2	3	W	0	7	2	2
5	High+1	10/03/2017	12:15	SS	2	E	2	8	1-2	2	2	E	0	8	1-2	2
5	High+2	24/03/2017	11:55	KD	1	W	0	7	2	2	1	W	0	7	2	2
5	High+3	23/03/2017	12:30	KD	3	SE	0	7	2	2	3	SE	0	7	2	2
5	High+4	09/03/2017	14:30	SS	3	NW	0	3	2	2	2	NW	0	3	2	2
5	High+5	08/03/2017	14:05	SS	6	SW	0	7	2	2	5	SW	0	5	2	2
5	Low	07/03/2017	13:35	SS	2	SW	0	7	2	2	2	SW	0	7	2	2
5	Low+1	06/03/2017	13:15	SS	2	W	0	5	2	2	2	W	0	5	2	2
5	Low+2	03/03/2017	11:45	KD	0	N/A	0	4	2	2	2	W	0	6	2	2
5	Low+3	02/03/2017	12:05	KD	5	W	0	4	2	2	5	W	0	4	2	2
5	Low+4	20/03/2017	15:35	KD	6	W	4	8	1	2	6	W	0	4	2	2
5	Low+5	01/03/2017	13:30	KD	3	W	0	3	2	2	3	W	0	5	2	2
6	High	01/03/2017	14:35	KD	2	W	0	4	2	2	3	W	0	3	2	2



CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
6	High+1	13/03/2017	14:25	KD	4	W	0	7	2	2	4	W	0	7	2	2
6	High+2	10/03/2017	13:20	SS	2	E	2	8	1	2	2	E	0	8	1	2
6	High+3	24/03/2017	13:00	KD	2	W	0	8	2	2	2	W	0	8	2	2
6	High+4	23/03/2017	13:05	KD	3	SE	0	8	2	2	3	SE	0	8	2	2
6	High+5	20/03/2017	10:10	KD	4	W	2	8	1	2	4	W	0	2	2	2
6	Low	08/03/2017	15:10	SS	5	SW	0	7	2	2	4	SW	0	5	2	2
6	Low+1	07/03/2017	14:40	SS	3	SW	2	7	2	2	2	SW	2	8	2	2
6	Low+2	06/03/2017	14:20	SS	2	W	0	7	2	2	3	W	0	5	2	2
6	Low+3	03/03/2017	12:50	KD	3	W	0	6	2	2	3	W	0	7	2	2
6	Low+4	02/03/2017	13:10	KD	5	W	0	7	2	2	5	W	0	7	2	2
6	Low+5	09/03/2017	09:05	SS	3	NW	0	1	2	2	3	NW	0	1	2	2
7	High	09/03/2017	10:10	SS	3	NW	0	1	2	2	3	NW	0	1	2	2
7	High+1	08/03/2017	09:45	SS	4	SW	0	5	2	2	5	SW	0	7	2	2
7	High+2	13/03/2017	15:30	KD	4	W	0	8	2	2	4	W	0	8	2	2
7	High+3	10/03/2017	14:25	SS	2	E	0	8	1	2	2	E	0	8	1	2
7	High+4	24/03/2017	14:05	KD	2	W	0	8	2	2	2	W	0	8	2	2
7	High+5	23/03/2017	14:10	KD	4	SE	0	8	2	2	3	SE	0	8	2	2
7	Low	20/03/2017	11:15	KD	4	W	0	7	2	2	4	W	0	4	2	2
7	Low+1	01/03/2017	09:10	KD	0	n/a	0	7	2	2	0	n/a	0	8	2	2
7	Low+2	07/03/2017	15:45	SS	2	SW	2	8	2	2	2	SW	0	8	2	2
7	Low+3	06/03/2017	15:25	SS	3	W	0	5	2	2	2	W	0	3	2	2
7	Low+4	03/03/2017	13:55	KD	4	SE	0	8	2	2	4	Se	0	8	2	2
7	Low+5	02/03/2017	14:15	KD	5	W	0	6	2	2	4	W	0	8	2	2



April 2017

CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
1	High	06/04/2017	09:15	SS	3	W	0	8	2	2	3	W	0	7	2	2
1	High+1	21/04/2017	09:45	SS	3	W	2	8	2	2	3	W	0	8	2	2
1	High+2	05/04/2017	10:10	RG	5	W	0	8	2	2	5	W	0	8	2	2
1	High+3	03/04/2017	08:45	KD	2	E	0	8	2	2	2	E	0	8	2	2
1	High+4	04/04/2017	10:50	KD	4	W	0	6	2	2	4	W	0	6	2	2
1	High+5	18/04/2017	10:30	RG	2	SE	0	8	1	2	2	SE	0	8	1	2
1	Low	13/04/2017	08:45	SS	3	W	0	5	2	2	3	W	0	7	2	2
1	Low+1	12/04/2017	09:20	SS	3	W	0	7	2	2	3	W	0	5	2	2
1	Low+2	11/04/2017	09:35	KD	4	W	0	8	1	2	4	W	0	8	1	2
1	Low+3	10/04/2017	10:05	RG	3	NW	0	1	2	2	4	NW	0	1	2	2
1	Low+4															
1	Low+5	07/04/2017	09:45	SS	3	W	0	8	2	2	3	W	0	7	2	2
3	High	07/04/2017	10:50	SS	3	W	0	5	2	2	3	W	0	7	2	2
3	High+1	06/04/2017	10:20	SS	3	W	2	7	2	2	4	W	2-3	7	2	2
3	High+2	21/04/2017	10:50	SS	3	W	0	7	2	2	3	W	0	8	2	2
3	High+3	05/04/2017	11:15	RG	5	W	0	8	1	2	6	W	2	8	1	2
3	High+4	03/04/2017	09:50	KD	3	SE	0	8	2	2	3	SE	0	8	2	2
3	High+5	04/04/2017	11:55	KD	4	W	0	5	2	2	4	W	0	4	2	2
3	Low	18/04/2017	11:35	RG	1	SE	0	8	2	2	2	SE	0	8	2	2
3	Low+1	13/04/2017	09:50	SS	3	W	0	7	2	2	3	W	2	7	2	2
3	Low+2	12/04/2017	10:25	SS	4	W	2	7	2	2	4	W	0	7	2	2
3	Low+3	11/04/2017	10:40	KD	5	W	0	8	1	2	5	W	0	8	1	2
3	Low+4	10/04/2017	11:10	RG	4/5	NW	0	1	2	2	4	NW	0	1	2	2
3	Low+5															
4	High															



CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
4	High+1	07/04/2017	11:55	SS	3	W	0-2	7	1-2	2	3	W	0	7	2	2
4	High+2	06/04/2017	11:25	SS	3	W	0	7	2	2	3	W	0	8	2	2
4	High+3	21/04/2017	11:55	SS	3	W	0	7	2	2	3	W	3	7	1/2	2
4	High+4	05/04/2017	12:20	RG	5	W	0	8	1	2	5	W	0	8	1	2
4	High+5	03/04/2017	10:50	KD	3	SE	0	8	2	2	3	SE	0	8	2	2
4	Low	04/04/2017	KD	KD	5	W	2	7	2	2	4	W	0	7	2	2
4	Low+1	18/04/2017	12:40	RG	3	SE	0	8	2	2	3	SE	0	8	2	2
4	Low+2	13/04/2017	10:55	SS	3	W	0	7	2	2	3	W	0	7	2	2
4	Low+3	12/04/2017	11:30	SS	3	W	0	7	2	2	4	W	2	7	2	2
4	Low+4	11/04/2017	11:45	KD	5	W	0	8	2	2	5	W	0	8	2	2
4	Low+5	10/04/2017	12:15	RG	6	NW	0	2	2	2	5	NW	0	3	2	2
5	High	10/04/2017	13:20	RG	5	NW	0	6	1	2	5	NW	0	7	1	2
5	High+1															
5	High+2	07/04/2017	13:00	SS	3	W	0	7	2	2	3	W	0	7	2	2
5	High+3	06/04/2017	12:30	SS	3	W	0	7	2	2	3	W	0	7	2	2
5	High+4	21/04/2017	13:00	SS	3	W	0	7	2	2	3	W	0	7	2	2
5	High+5	05/04/2017	13:25	RG	5	W	0	8	1	2	5	W	0	8	1	2
5	Low	03/04/2017	11:55	KD	4	SE	0	8	2	2	4	SE	0	8	2	2
5	Low+1	04/04/2017	14:05	KD	5	W	2	8	2	2	5	W	2	8	2	2
5	Low+2	18/04/2017	13:45	RG	3	NE	0	8	2	2	4	NE	0	8	2	2
5	Low+3	13/04/2017	12:00	SS	3	W	0	7	2	2	3	W	3	7	2	2
5	Low+4	12/04/2017	12:35	SS	4	W	0	5	2	2	3	W	2	7	2	2
5	Low+5	11/04/2017	12:50	KD	5	W	0	8	2	2	6	W	0	8	2	2
6	High	11/04/2017	13:55	KD	5	E	0	8	2	2	6	W	0	8	2	2
6	High+1	10/04/2017	14:25	RG	4	NW	0	3	2	2	5	NW	0	6	2	2
6	High+2															

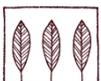


CP Number	Tide status	Date	Count start time	Observer	Start wind speed	Start wind direction	Start rain	Start cloud cover	Start cloud height	Start visibility	End wind speed	End wind direction	End rain	End cloud cover	End cloud height	End visibility
6	High+3	07/04/2017	14:05	SS	3	W	0	7	2	2	3	W	0	7	2	2
6	High+4	06/04/2017	13:35	SS	3	W	0	7	2	2	3	W	0	7	2	2
6	High+5	21/04/2017	14:05	SS	3	W	0	5	2	2	3	W	0	5	2	2
6	Low	05/04/2017	14:30	RG	4	W	0	8	2	2	4	W	0	8	2	2
6	Low+1	03/04/2017	13:00	KD	4	SE	0	8	2	2	4	SE	0	8	2	2
6	Low+2	04/04/2017	15:10	KD	4	W	2	8	2	2	4	W	0	8	2	2
6	Low+3	18/04/2017	14:50	RG	3	SW	0	8	2	2	3	SW	0	8	2	2
6	Low+4	13/04/2017	13:05	SS	3	W	0	7	2	2	3	W	0	5	2	2
6	Low+5	12/04/2017	13:40	SS	3	W	2	7	2	2	3	W	0	7	2	2
7	High	12/04/2017	14:45	SS	3	W	0	5	2	2	3	W	0	5	2	2
7	High+1	11/04/2017	15:00	KD	6	W	0	8	2	2	6	W	0	8	2	2
7	High+2	10/04/2017	15:30	RG	5	NW	0	4	2	2	5	NW	0	4	2	2
7	High+3															
7	High+4	07/04/2017	15:10	SS	3	W	0	7	2	2	3	W	0	7	2	2
7	High+5	06/04/2017	14:40	SS	3	W	0	7	2	2	3	W	0	7	2	2
7	Low	21/04/2017	15:10	SS	3	W	0	5	2	2	3	W	0	5	2	2
7	Low+1	05/04/2017	15:35	RG	5	W	0	8	2	2	5	W	0	8	2	2
7	Low+2	03/04/2017	14:05	KD	4	SSE	0	8	2	2	4	SSE	0	8	2	2
7	Low+3	04/04/2017	16:15	KD	4	W	0	8	2	2	4	W	0	8	2	2
7	Low+4	18/04/2017	15:55	RG	3	SW	0	8	2	2	3	SW	0	8	2	2
7	Low+5	13/04/2017	14:10	SS	3	W	0	7	2	2	3	W	0	7	2	2



Appendix B

Summary Results by Month



Species	BoCC	Number of individuals recorded								
		September	October	November	December	January	February	March	April	Total
bar-tailed godwit	amber	24				90	2	2	98	216
black-headed gull	amber	2322	818	957	576	184	749	815	55	6476
black-tailed godwit	red	16								16
Canada goose	none	60								60
common gull	amber	42	12	4	6	12	331	228	159	794
common sandpiper	amber	1								1
cormorant	green	403	216	174	120	110	80	76	43	1222
curlew	red	1023	736	473	485	160	273	139	366	3655
dunlin	amber	214	622	476	406	668	61	85		2532
eider	amber			1					2	3
glaucous gull	amber				1					1
goldeneye	amber		4	63	33	36	55	69	2	262
goosander	green	1	13	7	42	9			5	77
great black-backed gull	amber	13	51	15	16	10	33	29	16	183
great crested grebe	green		7	13	6	3	1	3	5	38
green sandpiper	amber				4	1				5
greenshank	amber	1		6	3				1	11
grey heron	green	67	48	35	28	44	24	5	4	255
greylag goose	amber			6	19					25
guillemot	amber	2	6	2						10
herring gull	red	104	36	33	102	46	58	14	34	427
kingfisher	amber	6	2	3			1			12
knot	amber	5								5
lapwing	red	1272	1210	502	207	225	6			3422
lesser black-backed gull	amber	800	264	14	5	5	13	64	110	1275
little egret	green	1							1	2
little grebe	green		21	45	57	37	22	9		191
long-tailed duck	red			2						2
mallard	amber	308	173	100	92	93	143	113	54	1076
moorhen	green				4	1				5
mute swan	amber	23			2	10	4	2	5	46
osprey	amber								1	1
oystercatcher	amber	1552	860	881	878	889	831	411	400	6702
peregrine	green					1				1
razorbill	amber	17	3							20
red-breasted merganser	green	1	1	15	18	33	38	16	48	170
redshank	amber	1342	1824	1939	1082	1040	1120	1247	442	10036
red-throated diver	green		1	2	4					7
ringed plover	red								2	2
scaup	red		6	1						7
shelduck	amber		4	2	2	6	5	19	27	65
snipe	amber	13	36	4		2	1			56
teal	amber	506	370	870	1186	1614	1460	836	223	7065
tufted duck	green	2					1			3
water rail	green			2	2	4			3	11



Species	BoCC	Number of individuals recorded								
		September	October	November	December	January	February	March	April	Total
whooper swan	amber				4					4
wigeon	amber	182	461	562	858	1057	1236	850	31	5237
Totals		10323	7805	7209	6248	6390	6548	5032	2137	51692



Appendix C

Disturbance Events and Other Field Notes



September 2016

CP Number	Tide status	Date	Count start time	Observer	Field notes
1	High	13/09/2016	10:30	RDG	Two grey seals seen. Movement of gulls downstream. Highwater 15 m from saltmarsh throughout. Survey birds at 10:35 and 10:50 beyond east end of section 1. No birds disturbed. 40 C noted, only present for around 4 minutes.
1	High+1	28/09/2016	13:20	RDG	Police boat down river at 13:40 nothing to disturb. By 14:30 line of around 25 OC noted feeding along tideline here (from CP3).
1	High+2	27/09/2016	12:40	SS	Two RA flew west-east through zone 1 at 12:55. One RA flew east-west through zone 1 at 13:04. Zero disturbance.
1	High+3	26/09/2016	12:10	SS	-
1	High+4	23/09/2016	10:00	RDG	Water rails calling in reedbed. No disturbance and no likely causes of disturbance.
1	High+5	22/09/2016	10:05	SS	Zero disturbance. ET within zone 1.
1	Low	21/09/2016	10:20	SS	Zero disturbance, 4 MS flew through zone.
1	Low+1	20/09/2016	10:40	RDG	[Redacted]
1	Low+2	19/09/2016	10:50	SS	Zero disturbance.
1	Low+3	16/09/2016	09:55	SS	Zero disturbance.
1	Low+4	15/09/2016	10:20	SS	10:44 - 10:46, 2 tug boats and 1 cargo boat went through zone east - west. 45 T. flew east to west, 14 OC flew east to west, 3 RK flew west to east. Due to boats.
1	Low+5	14/09/2016	10:35	RDG	Water rails calling in nearby Phragmites. Small movement of CU and OC along tideline upstream, presumably to roost in section 3. Tideline around 60 m from saltmarsh.
3	High	14/09/2016	11:40	RDG	Milton island exposed. One unknown disturbance at 11:45 OC moved in flock. 11:50 small motor boat up river, no disturbance.
3	High+1	13/09/2016	11:35	RDG	11:45 survey boat within section 3 disturbed H. Flats began to be exposed but no significant bird movement away from original position where birds had roosted at full tide. Tide did not cover saltmarsh islands.
3	High+2	28/09/2016	14:25	RDG	Much of Milton Island dry by end of period.
3	High+3	27/09/2016	13:45	SS	Zero disturbance.
3	High+4	26/09/2016	13:15	SS	-
3	High+5	23/09/2016	11:05	RDG	Medium sized boat had passed down river at 10:55 just as I arrived. Any potential disturbance not observed. No other disturbance.
3	Low	22/09/2016	11:10	SS	Zero disturbance.
3	Low+1	21/09/2016	11:25	SS	Zero disturbance.
3	Low+2	20/09/2016	11:45	RDG	American wigeon (eclipse). No disturbance.
3	Low+3	19/09/2016	11:55	SS	Zero disturbance.
3	Low+4	16/09/2016	11:00	SS	11:15 two small boats west-east through zone.
3	Low+5	15/09/2016	11:30	SS	11:33 - 11:34 one small speed boat went west - east through zone.
4	High	15/09/2016	12:30	SS	12:37 one tugboat west-east went through zone. 12:44 one cargo boat west-east went through zone. 12:46 one small speed boat east-west went through zone.
4	High+1	14/09/2016	12:45	RDG	K. flew N over river. Three TU upriver.
4	High+2	13/09/2016	12:40	RDG	One K south over river. RK on south side of river. Small gull movement downstream. OC movement from roost in section 3.
4	High+3	28/09/2016	15:30	RDG	Visibility ok but very poor light, dark. Very heavy rain latterly. 15:30 small boat upriver. No disturbance.
4	High+4	27/09/2016	14:50	SS	Large cargo boat east-west went through Zone at 15:13.
4	High+5	26/09/2016	14:55	SS	Small speedboat went through zone west-east at 14:58.



CP Number	Tide status	Date	Count start time	Observer	Field notes
4	Low	23/09/2016	12:10	RDG	Very few birds to disturb. At 12:15 walker plus dog along edge of saltmarsh of southern shore. Gulls and crows up but no effect on few birds within count zone. Some shore exposed on north side but no birds there.
4	Low+1	22/09/2016	12:15	SS	Zero disturbance.
4	Low+2	21/09/2016	12:30	SS	Two speedboats east-west at 12:48 disturbing 3 CA off water. 2 MS flew through zone.
4	Low+3	20/09/2016	12:50	RDG	One small craft upstream at 13:00. A few gulls flew but not the cormorant.
4	Low+4	19/09/2016	13:00	SS	Zero disturbance.
4	Low+5	16/09/2016	12:05	SS	Zero disturbance. 4 RA flew west-east through zone 4.
5	High	15/06/2016	13:10	SS	Zero disturbance.
5	High+1	15/09/2016	13:35	SS	Zero disturbance.
5	High+2	14/09/2016	13:50	RDG	Large freighter upstream with tug at 13:35. Made 30+ teal fly, probably from section 3 up and down river. Four auks just before this. Mudflats to south of sector appeared at the end of time period.
5	High+3	13/09/2016	13:45	RDG	All birds on the southern tideline well beyond survey boundary.
5	High+4	28/09/2016	16:35	RDG	-
5	High+5	27/09/2016	15:55	SS	Zero disturbance.
5	Low	26/09/2016	16:00	SS	Zero disturbance.
5	Low+1	23/09/2016	13:15	RDG	At 13:05-13:15 a freighter and tug and three motorized yachts passed upriver. Most birds on south tideline flew or were disturbed by the wash.
5	Low+2	22/09/2016	13:20	SS	Zero disturbance.
5	Low+3	21/09/2016	13:35	SS	Two speedboats west-east through zone at 14:03.
5	Low+4	20/09/2016	13:55	RDG	14:20 tug upriver. No birds to disturb. Followed by freighter and tug.
5	Low+5	19/09/2016	14:05	SS	Zero disturbance.
6	High	19/09/2016	15:10	SS	Zero disturbance.
6	High+1	16/09/2016	14:15	SS	Zero disturbance.
6	High+2	15/09/2016	14:40	SS	15:01 one tug boat east-west went through zone.
6	High+3	14/09/2016	14:55	RDG	One GU flying upstream. Tug returned downstream at 15:30. Wake pushed all birds up the flat but did not fly off.
6	High+4	13/09/2016	14:50	RDG	Occasional disturbance of gulls by flying H.
6	High+5	20/09/2016	08:30	RDG	No disturbance. Four tree sparrows by count point. 8+ long-tailed tits. 1 willow warbler.
6	Low	27/09/2016	17:00	SS	Zero disturbance.
6	Low+1	26/09/2016	17:05	SS	Zero disturbance.
6	Low+2	23/09/2016	14:20	RDG	Birds just about within count area when along tideline. Several "dreads" by L, DN and RK but landed back along tideline. By end of count, count area fully flooded.
6	Low+3	22/09/2016	14:25	SS	Zero disturbance.
6	Low+4	21/09/2016	14:40	SS	Zero disturbance.
6	Low+5	28/09/2016	11:10	RDG	11:30 police patrol rib upriver. No birds in count area to disturb.
7	High	28/09/2016	12:15	RDG	Ebb visible by 12:30. Mist as well as rain but visibility ok for count area. 12:30 freighter upriver with turbine blades.
7	High+1	27/09/2016	11:35	SS	One RA flew east-west through zone 7 at 11:36. Three RA flew west-east through zone 7 at 11:39. Two RA flew east-west through zone 7 at 11:45. Zero disturbance.
7	High+2	26/09/2016	11:05	SS	Zero disturbance.
7	High+3	15/09/2016	15:45	SS	Zero disturbance.
7	High+4	14/09/2016	16:00	RDG	-
7	High+5	13/09/2016	15:55	RDG	RA flew down river just before start.
7	Low	20/09/2016	09:35	RDG	No disturbance.



CP Number	Tide status	Date	Count start time	Observer	Field notes
7	Low+1	19/09/2016	09:50	SS	Zero disturbance.
7	Low+2	16/09/2016	09:00	SS	Zero disturbance.
7	Low+3	23/09/2016	15:25	RDG	At 15:15 two tugs very fast down river with huge washes produced but no birds in count area to disturb. Tideline well beyond count area, south count area fully flooded but RK, gulls, CU etc. there in number. Two lads sitting on old pier.
7	Low+4	22/09/2016	15:30	SS	One large boat west-east at 15:41. One speed boat west-east at 15:42. 1 speed boat east-west at 15:46. 130 RK flew through zone 7. 28 DN flew through zone 7.
7	Low+5	21/09/2016	15:45	SS	Zero disturbance.

October 2017

CP Number	Tide status	Date	Count start time	Observer	Field notes
1	High	11/10/2016	08:30	RG	Tideline around 60 m from saltmarsh.
1	High+1	18/10/2016	15:55	TE	
1	High+2	17/10/2016	16:20	SS	Zero disturbance.
1	High+3	14/10/2016	15:15	SS	Zero disturbance.
1	High+4	13/10/2016	15:30	SS	Waverly boat west-east through zone at 15:37 (disturbed four female SP and one CA).
1	High+5	12/10/2016	15:25	SS	Zero disturbance.
1	Low	03/10/2016	08:35	SS	Zero disturbance. PE adult male flew through zone at 09:02.
1	Low+1	11/10/2016	14:25	RG	North tideline not visible from viewpoint.
1	Low+2	07/10/2016	12:50	TE	Small motor boat up river 11:10.
1	Low+3	06/10/2016	13:20	RG	13:00 two tungsten frigates upriver, large wave. Birds did not flush on north side. On south side, birds on rocks between green marker flew. All this before count period. Three barnacle geese up river in flight. Sun in eyes due south. 13:30 a third frigate upriver, the few birds present no flushed by wave. Water rails calling. Small movement of CU upriver probably to roost somewhere (section 3?).
1	Low+4	05/10/2016	13:50	RG	Recent fisherman activity across mudflats (1 person) and no birds present on arrival at 13:35. Upriver movement of CU and OC, to section 3? from south side of river and gulls upriver, Water rail in sedges.
1	Low+5	04/10/2016	14:25	SS	Large freight boat east-west through zone at 14:40 (disturbing 2 CA).
3	High	12/10/2016	10:00	SS	Zero disturbance.
3	High+1	11/10/2016	09:35	RG	Birds in section 1 and this section mostly still roosting. At end of period (10:05) through a few individual CU and OC had moved off.
3	High+2	10/10/2016	09:00	RG	09:15 single helicopter above fog - no disturbing effect.
3	High+3	07/10/2016	08:05	RG	Naval vessel upriver at 07:35. Not sure if it disturbed birds in this section. 41 RK disturbed by self at 08:15, flew across river.
3	High+4	14/10/2016	16:20	SS	Zero disturbance.
3	High+5	05/10/2016	08:25	RG	The wigeon flew in, probably from same area as they landed.
3	Low	04/10/2016	09:00	SS	Medium sized boat west-east through zone at 09:24 (disturbing one CA).
3	Low+1	03/10/2016	09:40	SS	Zero disturbance. PE female juvenile hunting at 10:07
3	Low+2	18/10/2016	10:30	TE	10:43 rib downriver to inspect jetties close to shore flushed H. and three OC from shoreline. Rib close into shore until survey end at 11:00.
3	Low+3	07/10/2016	13:55	TE	N/A
3	Low+4	06/10/2016	14:25	RG	14:35 Naval frigate upriver, then freighter and tug. Some wash caused minor bird movement to higher ground.
3	Low+5	13/10/2016	10:05	SS	Zero disturbance.
4	High	13/10/2016	11:10	SS	Two people shooting on opposite banking using duck decoys (eight shots fired during CP).



CP Number	Tide status	Date	Count start time	Observer	Field notes
4	High+1	12/10/2016	11:05	SS	Zero disturbance.
4	High+2	11/10/2016	10:40	RG	Birds at south side tideline well beyond count area.
4	High+3	11/10/2016	10:05	RG	
4	High+4	07/10/2016	08:30	TE	N/A
4	High+5	06/10/2016	09:00	RG	Two wildfowlers set up on south shore. Two shots fired, no obvious birds present to disturb. Single person walking on south side saltmarsh. No birds present to disturb.
4	Low	05/10/2016	09:30	RG	Small movement of BH upriver. Where are all the cormorants?
4	Low+1	04/10/2016	10:05	SS	Zero disturbance.
4	Low+2	03/10/2016	10:45	SS	Zero disturbance.
4	Low+3	18/10/2016	11:35	TE	Yacht upriver 11:44. Piers etc. inspected by rib until around 11:15.
4	Low+4	17/10/2016	12:00	SS	Zero disturbance.
4	Low+5	14/10/2016	10:55	SS	Small sailing boat west-east through zone at 11:13 (didn't disturb any birds).
5	High	14/10/2016	12:00	SS	Zero disturbance.
5	High+1	13/10/2016	12:15	SS	Zero disturbance.
5	High+2	12/10/2016	12:10	SS	Zero disturbance.
5	High+3	11/10/2016	11:45	RG	Tideline more or less on edge of count area 4, poor light (into sun) so count may not be accurate.
5	High+4	11/10/2016	11:10	RG	Freighter upriver at 10:45 which caused minor disturbances.
5	High+5	07/10/2016	09:35	TE	09:43 all birds (T., RK, CU, BH) flew. Reason unknown. T. resettled briefly the SW, BH and RK returned.
5	Low	06/10/2016	10:05	RG	Still some shooting by wildfowlers in sections 3 and 1. No obvious disturbance. Teal flushed by helicopter upriver, but returned.
5	Low+1	05/10/2016	10:35	RG	
5	Low+2	04/10/2016	11:10	SS	Zero disturbance.
5	Low+3	03/10/2016	11:50	SS	Zero disturbance.
5	Low+4	18/10/2016	12:40	TE	
5	Low+5	17/10/2016	13:05	SS	Zero disturbance.
6	High	17/10/2016	14:10	SS	Zero disturbance.
6	High+1	14/10/2016	13:05	SS	Zero disturbance.
6	High+2	13/10/2016	13:20	SS	Zero disturbance.
6	High+3	12/10/2016	13:15	SS	Large cargo boat east-west went through zone at 13:27 (flushing three CA).
6	High+4	11/10/2016	12:50	RG	
6	High+5	11/10/2016	12:15	RG	Birds flighty but remained in area. Sounds of shots from downriver may have been cause.
6	Low	07/10/2016	10:40	TE	
6	Low+1	06/10/2016	11:10	RG	One person and two dogs at east end of section 6 and 7. Some flushing of birds westwards.
6	Low+2	05/10/2016	11:40	RG	Tideline more or less on survey boundary. Freighter downriver at 12:10. tideline birds flew but returned to original location.
6	Low+3	04/10/2016	12:15	SS	Medium sized boat east-west through zone at 12:26 (no disturbed birds).
6	Low+4	03/10/2016	12:55	SS	Speed boat went through zone west-east at 13:05 only disturbed three C..
6	Low+5	18/10/2016	13:40	TE	
7	High	18/10/2016	14:50	TE	
7	High+1	17/10/2016	15:15	SS	Zero disturbance.
7	High+2	14/10/2016	14:10	SS	Zero disturbance.
7	High+3	13/10/2016	14:25	SS	Zero disturbance.
7	High+4	12/10/2016	14:20	SS	Zero disturbance.



CP Number	Tide status	Date	Count start time	Observer	Field notes
7	High+5	11/10/2016	13:55	RG	
7	Low	11/10/2016	13:20	RG	Disturbance by two people and two dogs on mudflats, made all birds in count area on south side fly off. Subsequent walker and dog disturbed nothing.
7	Low+1	07/10/2016	11:45	TE	Police launch downriver 11:54.
7	Low+2	06/10/2016	12:15	RG	Tideline beyond count area. Two tugs upriver at 12:25/12:30 no birds to disturb. Followed by naval frigate.
7	Low+3	05/10/2016	12:45	RG	Two people and four dogs on mudflats immediately prior to count. Any birds present there flew away, though all had been outside count area on high tide. 13:15 freighter upriver but after count period and no disturbance.
7	Low+4	04/10/2016	13:20	SS	Zero disturbance.
7	Low+5	03/10/2016	14:00	SS	Zero disturbance.

November 2016

CP Number	Tide status	Date	Count start time	Observer	Field notes
1	High	11/11/2016	09:35	SS	Zero Disturbance.
1	High+1	10/11/2016	09:00	SS	Zero Disturbance.
1	High+2	22/11/2016	10:35	SS	Zero Disturbance.
1	High+3	23/11/2016	10:40	RDG	
1	High+4	07/11/2016	08:45	TE	WA calling from reeds near VP 08:40. shots (wild fowling) on opposite shore 08:46 and 08:59.
1	High+5	08/11/2016	10:45	RDG	Three WA calling in nearby reeds. Likely some birds hidden behind causeway to south of channel. Constant passage of BH up-river.
1	Low	04/11/2016	08:40	SS	Zero disturbance.
1	Low+1	02/11/2016	08:45	RDG	Survey boat upriver at 09:00. Near low tide edge not visible fully from count point but wash from boat didn't disturb any birds from there.
1	Low+2	01/11/2016	09:20	RDG	Two WA calling in sedges. SP female floating down-river (against the tide). Large numbers of WN to the south, outside count area.
1	Low+3	03/11/2016	11:25	SS	Zero Disturbance.
1	Low+4	14/11/2016	07:53	TE	WA calling close to VP 10:09.
1	Low+5	15/11/2016	11:45	RDG	Tide very high. No room for roosting birds or feeding waders.
3	High	15/11/2016	12:50	RDG	Island roosting waders mostly flooded off during period (but some returned) and flew to south shore (CU mainly) or the piers (RK and OC).
3	High+1	11/11/2016	10:40	SS	Large freight boat east-west through zone at 10:54 (only flushed some BH and CA).
3	High+2	10/11/2016	10:05	SS	Zero Disturbance.
3	High+3	09/11/2016	09:50	SS	Zero Disturbance.
3	High+4	23/11/2016	11:45	RDG	Freighter up-river, past section at 11:40. RH flew down-river from this section but little other disturbance.
3	High+5	07/11/2016	10:20	TE	Couldn't access site until 10:15, made count 10:20 - 10:30 then resumed sequence.
3	Low	08/11/2016	11:50	RDG	Most birds left for south shore during period but often returned/ appeared soon after count period.
3	Low+1	04/11/2016	09:45	SS	RH mostly preening. Zero disturbance.
3	Low+2	02/11/2016	09:50	RDG	Gradual build-up of roosting/ edge feeding waders and ducks during period. Continued beyond count period as tide rose. Some disturbance by dog-walker on site.



CP Number	Tide status	Date	Count start time	Observer	Field notes
3	Low+3	01/11/2016	10:25	RDG	Between 10:40 and beyond survey time, whole area of flats disturbed by probable wildfowler and dog looking for winged/ dead birds - probably. Every bird flew south across river. A few returned after count time.
3	Low+4	03/11/2016	12:30	RDG	Zero Disturbance.
3	Low+5	14/11/2016	11:05	TE	Waders roosting in two groups on islands. Count of RK and DN an undercount as birds were out of sight on other side of island and DN in vegetation.
4	High	14/11/2016	12:10	TE	96 OC and 83 RK settled on piers near VP.
4	High+1	15/11/2016	13:55	RDG	Full high tide and very few birds. Constant movement of BH, CM and LB (rare). Gulls down-river.
4	High+2	11/11/2016	11:45	SS	Zero disturbance.
4	High+3	10/11/2016	11:10	SS	Zero disturbance.
4	High+4	09/11/2016	10:55	SS	Zero disturbance.
4	High+5	15/11/2016	12:50	RDG	Viewing directly into sun to south and no birds visible along causeway. Small passage of gulls downstream.
4	Low	07/11/2016	10:55	TE	Wildfowling on far shore, see map. Three shots at 10:37, three shots at 10:53 and shot at 10:54.
4	Low+1	08/11/2016	12:55	RDG	Waders (mostly RK) feeding on tideline on south shore beyond count area.
4	Low+2	04/11/2016	10:50	SS	Zero disturbance.
4	Low+3	02/11/2016	10:55	RDG	Building of T., WN, RK and OC on south shoreline well beyond count area. 11:02 PE chasing BW high over section 3. 2 ravens over, displaying. Explosion in quarry behind - may have caused RKs to fly from section 3.
4	Low+4	01/11/2016	11:30	RDG	Two tugs and freighter up river. Arriving in count area at 11:30 and leaving at 11:45 no birds present to disturb.
4	Low+5	03/11/2016	13:35	SS	Zero disturbance.
5	High	03/11/2016	14:40	SS	Zero disturbance.
5	High+1	14/11/2016	04:53	TE	
5	High+2	15/11/2016	15:00	RDG	Cormorants fishing in very rough water (strong wind against tide) Male PE hunting.
5	High+3	11/11/2016	12:50	SS	Zero disturbance.
5	High+4	10/11/2016	12:15	SS	Zero Disturbance.
5	High+5	09/11/2016	12:00	SS	Zero disturbance.
5	Low	23/11/2016	13:55	RDG	
5	Low+1	07/11/2016	12:00	TE	T., CU, OC, RK and BH flew 12:06 when BZ circled over.
5	Low+2	08/11/2016	14:00	RDG	Tideline birds well beyond count area L., RK, DN, OC, CU. Drizzle started around half way through.
5	Low+3	04/11/2016	11:55	SS	Zero disturbance.
5	Low+4	02/11/2016	12:00	RDG	Survey boat down-river at 12:00, no disturbance caused. Tug up-river at 12:12, freighter up-river at 12:18.
5	Low+5	01/11/2016	12:35	RDG	
6	High	01/11/2016	13:40	RDG	Dense roost of waders on exposed peninsular well south of count boundary. No dry land within count area. This roost (dunlin, redshank, oystercatcher mainly) flushed by dredger and two tugs at 14:40 (outside count time).
6	High+1	22/11/2016	09:30	SS	Zero disturbance.
6	High+2	14/11/2016	14:20	TE	
6	High+3	22/11/2016	11:40	SS	Zero Disturbance.
6	High+4	11/11/2016	13:55	SS	PE adult female hunting and flushed all waders and most gulls out of zone at 14:18. Zero disturbance.
6	High+5	10/11/2016	13:20	SS	Zero disturbance.
6	Low	09/11/2016	13:05	SS	Zero disturbance.
6	Low+1	03/11/2016	09:15	RDG	Zero disturbance.
6	Low+2	07/11/2016	13:05	TE	



CP Number	Tide status	Date	Count start time	Observer	Field notes
6	Low+3	15/11/2016	09:35	RDG	WN feeding on floating sewage? Discharge. Southern tideline well beyond count area.
6	Low+4	04/11/2016	13:00	SS	Large freight boat east-west went through zone at 13:03 (didn't disturb any birds).
6	Low+5	02/11/2016	13:05	RDG	13:02 boat up-river. No birds to disturb. DN, OC, WN, L. roosting on south bank beyond count area.
7	High	02/11/2016	14:10	RDG	14:10 WN and RK all flooded off shore by wash from 2 down-river tugs.
7	High+1	01/11/2016	14:45	RDG	180 L. and 170 DN on southern tideline at edge of saltmarsh well beyond count area. Constant down-river movement of gulls to roost on lagoon on site.
7	High+2	23/11/2016	09:35	RDG	
7	High+3	22/11/2016	12:15	SS	Zero disturbance.
7	High+4	08/11/2016	09:40	RDG	Up-stream movement of RK. Long-tailed duck section 6.
7	High+5	22/11/2016	13:55	SS	Zero disturbance.
7	Low	10/11/2016	14:25	SS	Zero disturbance.
7	Low+1	09/11/2016	14:10	SS	Zero disturbance.
7	Low+2	03/11/2016	10:20	SS	Zero disturbance.
7	Low+3	07/11/2016	14:05	TE	
7	Low+4	15/11/2016	10:40	RDG	Wader roost just beyond count boundary to east. Birds constantly up and down owing to unseen disturbance and many apparently hidden in Bowling harbour. Southern tideline roost well beyond count area.
7	Low+5	04/11/2016	14:05	SS	Zero disturbance.

December 2016

CP Number	Tide status	Date	Count start time	Observer	Field notes
1	High	15/12/2016	13:20	RDG	Very high tide, no room for roosting birds.
1	High+1	23/12/2016	09:40	SS	Zero disturbance.
1	High+2	23/12/2016	10:15	SS	Zero disturbance.
1	High+3	08/12/2016	09:20	SS	Zero disturbance.
1	High+4	21/12/2016	09:45	RDG	Recent heavy rain.
1	High+5	06/12/2016	09:30	RDG	Near water edge not visible from VP. Rain from 09:50.
1	Low	05/12/2016	09:45	TE	
1	Low+1	21/12/2016	13:00	RDG	
1	Low+2	21/12/2016	14:05	RDG	Hail.
1	Low+3	02/12/2016	11:00	SS	Zero disturbance.
1	Low+4	13/12/2016	09:40	SS	Dog walker at 09:46 flushed 17 OC, 40 T., 10 WN.
1	Low+5	12/12/2016	09:50	TE	2 WA calling near VP.
3	High	12/12/2016	10:55	TE	Tanker type boat down river around 10:45.
3	High+1	15/12/2016	14:25	RDG	OC roost on pier bases.
3	High+2	09/12/2016	09:20	SS	Zero disturbance.
3	High+3	22/12/2016	09:45	SS	Zero disturbance.
3	High+4	08/12/2016	10:25	SS	Zero disturbance.
3	High+5	07/12/2016	10:20	RDG	
3	Low	06/12/2016	10:35	RDG	
3	Low+1	05/12/2016	10:50	TE	Wildfowler (see map) fired 3 shots 10:50-10:55, left at 11:00.



CP Number	Tide status	Date	Count start time	Observer	Field notes
3	Low+2	01/12/2016	09:25	SS	Dog walker (dog off lead) went through zone between 09:25-09:32. 2 x shooter on southern shore firing shots and using duck decoys in water both of above caused more flights than usual in zone 3.
3	Low+3	14/12/2016	09:20	RDG	Parties pf RK flying up-river.
3	Low+4	02/12/2016	12:05	SS	Zero disturbance.
3	Low+5	13/12/2016	10:45	SS	Zero disturbance.
4	High	13/12/2016	11:50	SS	Zero disturbance.
4	High+1	12/12/2016	12:50	TE	
4	High+2	23/12/2016	09:55	RDG	Squalls, wind speed sometimes 7-8. Too exposed to wind for happily roosting birds, around 30 OC feeding in section 3.
4	High+3	09/12/2016	10:25	SS	Zero disturbance.
4	High+4	22/12/2016	10:50	SS	2 x shooter using duck decoys southern edge of river (no shots fired).
4	High+5	08/12/2016	11:30	SS	Zero disturbance.
4	Low	07/12/2016	11:25	RDG	Scatter of OC on mud south of survey area - around 15 and 5 Cu. 11:43 small naval 'tracker' launch down river followed by 'raider' - flushed birds from causeway and tide edge.
4	Low+1	06/12/2016	11:40	RDG	
4	Low+2	05/12/2016	11:55	TE	
4	Low+3	01/12/2016	10:30	SS	Zero disturbance.
4	Low+4	14/12/2016	10:25	RDG	
4	Low+5	02/12/2016	13:10	SS	Zero disturbance.
5	High	02/12/2016	14:15	SS	Zero disturbance.
5	High+1	13/12/2016	12:55	SS	Zero disturbance.
5	High+2	12/12/2016	13:05	TE	
5	High+3	23/12/2016	11:00	RDG	RK roost in shelter of pier.
5	High+4	09/12/2016	11:30	SS	Zero disturbance.
5	High+5	22/12/2016	11:55	SS	Zero disturbance.
5	Low	08/12/2016	12:35	SS	Zero disturbance.
5	Low+1	07/12/2016	12:30	RDG	Southern tideline beyond survey area - No birds there anyway.
5	Low+2	06/12/2016	12:45	RDG	At 12:20 two boats up-river creating wash that scoured the 'basin' but no birds present there.
5	Low+3	05/12/2016	13:00	TE	
5	Low+4	01/12/2016	11:35	SS	Zero disturbance.
5	Low+5	14/12/2016	11:30	RDG	
6	High	14/12/2016	12:35	RDG	High tide line to the south beyond count area.
6	High+1	12/12/2016	09:50	SS	Zero disturbance.
6	High+2	13/12/2016	14:00	SS	Zero disturbance.
6	High+3	12/12/2016	14:10	TE	
6	High+4	23/12/2016	12:05	RDG	Southern tideline beyond count area and no birds except 10 BH and 4 MA.
6	High+5	09/12/2016	12:35	SS	Zero disturbance.
6	Low	22/12/2016	13:00	SS	Zero disturbance.
6	Low+1	08/12/2016	13:40	SS	Zero disturbance.
6	Low+2	07/12/2016	13:35	RDG	Survey boat down at 13:40. No birds to disturb.
6	Low+3	06/12/2016	13:50	RDG	13:50 - Boat downstream - fast police boat large wash (Teal and merganser both flew off) tug up at 14:01 big wash.
6	Low+4	05/12/2016	14:05	TE	Two boats up river at 14:20
6	Low+5	01/12/2016	12:40	SS	Police boat E-W went through zone 13:01-13:02 disturbing 4 MA.
7	High	01/12/2016	13:45	SS	Zero disturbance.



CP Number	Tide status	Date	Count start time	Observer	Field notes
7	High+1	14/12/2016	13:40	RDG	
7	High+2	12/12/2016	10:55	SS	Small boat E-W through zone at 11:17 (didn't disturb any birds).
7	High+3	12/12/2016	12:00	SS	Zero disturbance.
7	High+4	12/12/2016	13:05	SS	Zero disturbance.
7	High+5	23/12/2016	13:10	RDG	Southern tideline still beyond count area.
7	Low	09/12/2016	13:40	SS	Zero disturbance.
7	Low+1	22/12/2016	14:05	SS	Zero disturbance.
7	Low+2	02/12/2016	09:55	SS	Zero disturbance.
7	Low+3	15/12/2016	10:05	RDG	South tideline bird roost beyond survey area. Freighter upriver at 10:10 - a few WN disturbed from area 6. At this time 283RK, 1GK, 20DN roosting in basin of Sect 5.
7	Low+4	15/12/2016	11:10	RDG	
7	Low+5	15/12/2016	12:15	RDG	The RK and DN flock flew in at 12:40 (probably from section 5).

January 2017

CP Number	Tide status	Date	Count start time	Observer	Field notes
1	High	09/01/2017	09:30	RDG	
1	High+1	23/01/2017	10:15	KD	Oystercatcher moving along shore with dropping tide. Numbers rose from 8 to 53 in watch period.
1	High+2	23/01/2017	11:20	KD	Man with dog on beach in settling period (near VP) - didn't appear to flush many birds. Two seals passed down channel 11:35. Good numbers of birds.
1	High+3	24/01/2017	13:20	KD	Ship went upstream at 13:45.
1	High+4	24/01/2017	14:25	KD	Large ship passed through survey area at 14:53. At least 16 teal and 10 wigeon flushed from count area by the wake. Four oystercatcher and one curlew also flushed but re-landed in similar positions.
1	High+5	18/01/2017	09:15	KD	100+ GJ flew low through survey area 08:50. Wildfowler on far shore just before watch period.
1	Low	16/01/2017	09:00	KD	PE (Male?) flew through survey area 09:21 low, followed channel, no birds obviously flushed.
1	Low+1	20/01/2017	13:05	SS	Zero disturbance.
1	Low+2	18/01/2017	12:30	SS	Zero disturbance.
1	Low+3	12/01/2017	09:10	KD	Little activity. 7 wigeon, 6 MA, several gulls on water/ flying though.
1	Low+4	11/01/2017	09:25	RDG	Waves and 'white horses' tideline very exposed and wave battered. No birds on shore 1 male GE flew past, west.
1	Low+5	09/01/2017	09:35	RDG	Pretty birdless. Tide up to saltmarsh edge. 1 snipe up from reedbed. WA calling. Tug and freighter up-river at 09:15, no evidence that it disturbed any birds.
3	High	09/01/2017	10:40	RDG	11:05 tug down-river - no disturbance. At end of period, some OC flying from pier roost to island roost, as tide receded.
3	High+1	09/01/2017	13:35	RDG	Freighter up river at 10:35. Moderate was disturbed but didn't displace roosting waders on islands. Island roost of OC spread as mud exposed. 27 CU flew in at 10:55.
3	High+2	24/01/2017	12:15	KD	Peregrine flew over CP just after count finished.
3	High+3	23/01/2017	12:25	KD	Good numbers of wigeon.
3	High+4	19/01/2017	08:55	SS	Zero disturbance.
3	High+5	23/01/2017	14:35	KD	
3	Low	18/01/2017	10:20	KD	No birds on man-made structures.
3	Low+1	16/01/2017	10:05	KD	Nothing on the man-made structures.



CP Number	Tide status	Date	Count start time	Observer	Field notes
3	Low+2	18/01/2017	12:30	SS	Zero disturbance.
3	Low+3	13/01/2017	09:55	KD	Little on manmade structures.
3	Low+4	12/01/2017	10:15	KD	All BZ on built structures, as were 3/5 CA.
3	Low+5	11/01/2017	10:30	RDG	V. large waves. No islands or other roosting/ feeding places for birds except the concrete piers.
4	High	11/01/2017	11:35	RDG	
4	High+1	10/01/2017	11:45	RDG	
4	High+2	09/01/2017	11:40	RDG	
4	High+3	20/01/2017	08:45	SS	Zero disturbance.
4	High+4	23/01/2017	13:30	KD	Very little bird activity. Walkers with dog on far bank, probably not disturbing this survey area.
4	High+5	19/01/2017	10:00	SS	Zero disturbance.
4	Low	17/01/2017	09:40	SS	Zero disturbance.
4	Low+1	18/01/2017	11:25	KD	Nothing to report.
4	Low+2	16/01/2017	11:10	KD	(Grey?) seal present, no obvious disturbance to birds.
4	Low+3	18/01/2017	13:35	SS	Zero disturbance.
4	Low+4	13/01/2017	11:00	KD	Few birds on water.
4	Low+5	12/01/2017	11:20	SS	Visibility poor at times due to sun on water. Sea calmer by end of watch.
5	High	12/01/2017	12:25	KD	Nothing to report.
5	High+1	11/01/2017	12:40	RDG	
5	High+2	09/01/2017	12:50	RDG	
5	High+3	09/01/2017	12:45	RDG	Freighter down-river at 12:50. Teal in harbour flushed but returned.
5	High+4	20/01/2017	09:50	SS	Zero disturbance.
5	High+5	18/01/2017	09:15	SS	Zero disturbance.
5	Low	19/01/2017	11:05	SS	Zero disturbance.
5	Low+1	17/01/2017	10:45	SS	Zero disturbance.
5	Low+2	18/01/2017	12:30	KD	Ship passed through survey area 12:57.
5	Low+3	16/01/2017	12:15	KD	Grey seal present, no obvious disturbance to birds.
5	Low+4	17/01/2017	14:00	SS	Zero disturbance.
5	Low+5	13/01/2017	12:05	KD	Ship came through area at 12:20
6	High	13/01/2017	13:10	KD	Ship came through survey area 13:23
6	High+1	12/01/2017	13:30	KD	Few birds on water. Many gulls especially BH flying through (downstream).
6	High+2	11/01/2017	13:45	RDG	
6	High+3	10/01/2017	13:55	RDG	Little gull past with constant gull passage.
6	High+4	09/01/2017	13:50	RDG	
6	High+5	20/01/2017	10:55	SS	Zero disturbance.
6	Low	18/01/2017	10:20	SS	Zero disturbance.
6	Low+1	19/01/2017	12:10	SS	Zero disturbance.
6	Low+2	17/01/2017	11:50	SS	Zero disturbance.
6	Low+3	18/01/2017	13:35	KD	Little activity.
6	Low+4	16/01/2017	13:20	KD	Very little activity in survey area.
6	Low+5	17/01/2017	15:05	SS	Zero disturbance.
7	High	23/01/2017	09:10	KD	Few birds.
7	High+1	13/01/2017	14:15	KD	BZ over river, soaring at 14:15.
7	High+2	12/01/2017	14:35	KD	Little seen, poor visibility most of watch.
7	High+3	11/01/2017	14:50	RDG	



CP Number	Tide status	Date	Count start time	Observer	Field notes
7	High+4	19/01/2017	08:55	KD	Buzzard flew over river and CP at 09:13. Seal present at 09:23.
7	High+5	09/01/2017	14:55	RDG	
7	Low	20/01/2017	12:00	SS	Zero disturbance.
7	Low+1	18/01/2017	11:25	SS	
7	Low+2	19/01/2017	13:15	SS	Zero disturbance.
7	Low+3	17/01/2017	12:55	SS	Zero disturbance.
7	Low+4	18/01/2017	14:40	KD	Little activity. Around 200 dunlin and 200 lapwing on banks south of survey area.
7	Low+5	16/01/2017	14:25	KD	No birds recorded in count point area. Water very calm so detecting birds on the water would have been easy.

February 2017

CP Number	Tide status	Date	Count start time	Observer	Field notes
1	High	07/02/2017	09:00	KD	Low numbers of birds.
1	High+1	21/02/2017	09:15	SS	Zero disturbance.
1	High+2	20/02/2017	09:15 (09:00)	KD	Late start due to heavy traffic en route. No birds on water, rough.
1	High+3	06/02/2017	10:35	KD	Seal present in count area.
1	High+4	21/02/2017	12:45	RDG	
1	High+5	21/02/2017	13:50	RDG	
1	Low	01/02/2017	09:20	KD	Few birds visible despite low tide. Late start to count.
1	Low+1	14/02/2017	09:40	SS	Zero disturbance.
1	Low+2	13/02/2017	09:55	SS	Zero disturbance.
1	Low+3	10/02/2017	09:00	SS	Zero disturbance.
1	Low+4	03/02/2017	15:00	KD	Had to move position due to rising tide 15:20.
1	Low+5	08/02/2017	09:20	KD	Water very calm - good visibility and conditions.
3	High	08/02/2017	10:35	KD	At least 200 birds on Milton Island. Good visibility and conditions.
3	High+1	07/02/2017	10:05	KD	Growing numbers of birds gathering on Milton Island as tide retreats.
3	High+2	21/02/2017	10:20	SS	Zero disturbance.
3	High+3	20/02/2017	10:20 (10:05)	KD	Relatively few birds. Nothing on man-made structures, only birds on water were teal, first recorded on shore.
3	High+4	06/02/2017	11:40	KD	Relatively few birds on mud.
3	High+5	03/02/2017	09:45	KD	Late start (proposed time 09:35). Quite good numbers of birds. One little egret in survey area.
3	Low	02/02/2017	09:50	KD	Man sea-fishing off CP1 survey area from 10:00.
3	Low+1	01/02/2017	10:25	KD	Reasonable numbers of birds. Late start to count. One kingfisher seen.
3	Low+2	14/02/2017	10:45	SS	Zero disturbance.
3	Low+3	13/02/2017	11:00	SS	Zero disturbance.
3	Low+4	10/02/2017	10:05	SS	Zero disturbance.
3	Low+5	09/02/2017	10:20	SS	Zero disturbance.
4	High	09/02/2017	11:25	SS	Police speed boat E-W at 11:31 flushing 72 teal.
4	High+1	08/02/2017	11:30	KD	
4	High+2	07/02/2017	11:10	KD	Few birds on open water.
4	High+3	21/02/2017	11:25	SS	Zero disturbance.
4	High+4	20/02/2017	11:10	KD	Relatively few birds, none on open water.



CP Number	Tide status	Date	Count start time	Observer	Field notes
4	High+5	06/02/2017	12:45	KD	Small boat passed through 12:50, 13:00 and 13:10. Few if any birds disturbed.
4	Low	03/02/2017	11:00	KD	Late start (scheduled time 10:55). Peregrine pair 10:51, one with prey over CP area 1. Few birds in count area.
4	Low+1	02/02/2017	10:55	KD	Little egret just outside survey area.
4	Low+2	01/02/2017	11:20	KD	
4	Low+3	14/02/2017	11:50	SS	Zero disturbance.
4	Low+4	13/02/2017	12:05	SS	Zero disturbance.
4	Low+5	10/02/2017	11:10	SS	Zero disturbance.
5	High	10/02/2017	12:15	SS	Zero disturbance.
5	High+1	09/02/2017	12:30	SS	Zero disturbance.
5	High+2	08/02/2017	12:35	KD	
5	High+3	07/02/2017	12:15	KD	Good numbers of birds but few redshank.
5	High+4	21/02/2017	12:30	SS	Zero disturbance.
5	High+5	20/02/2017	12:15	KD	Good numbers of birds in the dock.
5	Low	06/02/2017	13:50	KD	Ship came through 13:56, no disturbing seen.
5	Low+1	03/02/2017	12:00	KD	Very good numbers of birds. Stoat working banks of bay, not known if it flushed any birds.
5	Low+2	02/02/2017	12:00	KD	Good numbers of birds in the bay.
5	Low+3	01/02/2017	12:25	KD	Good numbers of redshank and teal.
5	Low+4	13/02/2017	12:55	SS	Zero disturbance.
5	Low+5	13/02/2017	13:10	SS	Zero disturbance.
6	High	13/02/2017	14:15	SS	Medium size boat E-W through zone at 14:18 (zero birds flushed). Small size boat E-W through zone at 14:21 (zero birds flushed).
6	High+1	10/02/2017	13:20	SS	Small boat E-W through zone at 13:41 (no birds flushed).
6	High+2	09/02/2017	13:35	SS	Zero disturbance.
6	High+3	08/02/2017	13:40	KD	Seal present in count area.
6	High+4	07/02/2017	13:20	KD	Good numbers of birds on exposed mud.
6	High+5	21/02/2017	13:35	SS	Medium sized boat 13:49 W-E through zone, flushing 2 cormorant and 5 teal.
6	Low	20/02/2017	13:20	KD	Fast boat came through count area 13:39 - No signs of disturbance on birds.
6	Low+1	06/02/2017	14:55	KD	Reasonable numbers of waders.
6	Low+2	03/02/2017	12:50	KD	Seal in count area from 13:10.
6	Low+3	02/02/2017	13:05	KD	Very few birds on water.
6	Low+4	01/02/2017	13:30	KD	Police dinghy came through survey area 13:30. 1 cormorant flushed but re-landed nearby. (Dinghy going upstream) Tug came through upstream 13:35. 6 common gull and 3 mallard flushed/ displaced. Large ship came upstream 13:45. Little there to displace.
6	Low+5	14/02/2017	14:00	SS	Medium sized boat W-E through zone at 14:11 (no birds flushed). Medium sized boat W-E through zone at 14:14 (no birds flushed).
7	High	14/02/2017	15:05	SS	Zero disturbance.
7	High+1	21/02/2017	09:30	RDG	c. 120 redshank roosting at docks beyond survey area.
7	High+2	06/02/2017	09:30	KD	Few birds in count area. Gunshot (?) heard to east 09:20 - wild fowling?
7	High+3	09/02/2017	14:40	SS	Zero disturbance.
7	High+4	08/02/2017	14:45	KD	Boat came through count area 15:08.
7	High+5	07/02/2017	14:25	KD	
7	Low	21/02/2017	14:40	SS	Zero disturbance.
7	Low+1	20/02/2017	14:25	KD	No birds on water.
7	Low+2	27/02/2017	09:10	SS	Zero disturbance.
7	Low+3	03/02/2017	13:55	KD	Seal in count area briefly. Few birds present in count area.



CP Number	Tide status	Date	Count start time	Observer	Field notes
7	Low+4	02/02/2017	14:10	KD	Few birds on water.
7	Low+5	01/02/2017	14:35	KD	Raven flew north to south over CP7 and Clyde during settling period. Police dinghy going downstream 14:33, just before count. Nothing disturbed. Very few birds on the water.

March 2017

CP Number	Tide status	Date	Count start time	Observer	Field notes
1	High	23/03/2017	08:45	KD	A low high tide more than/ equal to 50 m exposed sand in front of VP. Waterline marked on map.
1	High+1	09/03/2017	11:15	SS	Speed boat W-E through zone at 11:26 (didn't flush any birds).
1	High+2	08/03/2017	10:50	SS	Zero disturbance.
1	High+3	07/03/2017	10:20	SS	Zero disturbance.
1	High+4	06/03/2017	10:00	SS	Zero disturbance.
1	High+5	24/03/2017	15:10	KD	Dinghy in survey area 15:19 - no disturbance observed.
1	Low	02/03/2017	09:00 (08:50)	KD	Few birds.
1	Low+1	20/03/2017	12:20	KD	Few birds. Many shorebirds have probably left for breeding grounds hence fewer birds even at low tide.
1	Low+2	01/03/2017	10:15	KD	Relatively low numbers of birds.
1	Low+3	13/03/2017	10:05	KD	Relatively few birds.
1	Low+4	10/03/2017	09:00	SS	Zero disturbance.
1	Low+5	03/03/2017	15:00	KD	Tide high. Had to do CP from in reeds.
3	High	24/03/2017	10:00 (09:45)	KD	Very low high tide, still lots of exposed sand/ mud. Conditions excellent. Good visibility, water flat calm. Tug went through survey area 10:09, 4oc and some CM displaced from man made structures.
3	High+1	23/03/2017	09:50	KD	Still a lot of exposed sand (see map). Good numbers of birds up creek.
3	High+2	09/03/2017	12:20	SS	Zero disturbance.
3	High+3	08/03/2017	11:55	SS	Zero disturbance.
3	High+4	07/03/2017	11:25	SS	Zero disturbance.
3	High+5	06/03/2017	11:05	SS	Zero disturbance.
3	Low	03/03/2017	09:35	KD	Tide exceptionally low. Good numbers of birds along the tideline. Furthest along the tideline. Furthest parts of count area difficult to see at times due to mist/haze.
3	Low+1	02/03/2017	10:15	KD	Late start due to access issue. Intended start time was 09:55. Bad weather encroached from west.
3	Low+2	20/03/2017	13:25	KD	Frequent squalls through the day. Good numbers of birds.
3	Low+3	01/03/2017	11:30	KD	Late start due to time getting from CP1. Small boat passed down stream 11:52, no disturbance noted.
3	Low+4	13/03/2017	11:10	KD	Two tugs and large ship passed through survey area 11:35 no disturbance observed.
3	Low+5	10/03/2017	10:05	SS	Zero disturbance.
4	High	10/03/2017	11:10	SS	Zero disturbance.
4	High+1	24/03/2017	10:50	KD	Naval ship through survey area 10:50, little dispersal noted if any (1 CM, 2 MA?), Conditions still very good.
4	High+2	23/03/2017	10:55	KD	
4	High+3	09/03/2017	13:25	SS	Zero disturbance.
4	High+4	08/03/2017	13:00	SS	Zero disturbance.



CP Number	Tide status	Date	Count start time	Observer	Field notes
4	High+5	07/03/2017	12:30	SS	Zero disturbance.
4	Low	06/03/2017	12:10	SS	Zero disturbance.
4	Low+1	03/03/2017	10:40	KD	Few birds in count area. Stock dove flushed from tide line (neat) 11:50, an odd record.
4	Low+2	02/03/2017	11:00	KD	
4	Low+3	20/03/2017	14:30	KD	
4	Low+4	01/03/2017	12:25	KD	
4	Low+5	13/03/2017	12:15	KD	Few birds especially on open water. Rough water and glare made counting open water difficult.
5	High	13/03/2017	13:20	KD	Tug passed through count area 13:31 - 40 teal displaced from bank by wave. Good numbers of teal and redshank some of the redshank were those recorded earlier in CP4 count area.
5	High+1	10/03/2017	12:15	SS	Zero disturbance.
5	High+2	24/03/2017	11:55	KD	Few birds. Becoming warm.
5	High+3	23/03/2017	12:30	KD	Works occurring near old house, by sea front.
5	High+4	09/03/2017	14:30	SS	Zero disturbance.
5	High+5	08/03/2017	14:05	SS	Zero disturbance.
5	Low	07/03/2017	13:35	SS	Zero disturbance.
5	Low+1	06/03/2017	13:15	SS	Zero disturbance.
5	Low+2	03/03/2017	11:45	KD	Few birds on open water - any would have been obvious due to very calm conditions. Kingfisher flew through count area, probably didn't land.
5	Low+3	02/03/2017	12:05	KD	
5	Low+4	20/03/2017	15:35	KD	Water rough.
5	Low+5	01/03/2017	13:30	KD	Ship passed through survey area 13:55 - 6 to 10 gulls flushed from path. No major disturbance.
6	High	01/03/2017	14:35	KD	Three large pump units draining lagoon between CP6 +CP7 all day, water pumped into Clyde. Still around 200 gulls on lagoon. Pair of oystercatcher on exposed gravel - could be potential nest site for this and other pairs as lagoon drained. Four people fishing on jetty by frisky wharf. Gulls on water mainly moving between there and lagoon.
6	High+1	13/03/2017	14:25	KD	Ver few birds.
6	High+2	10/03/2017	13:20	SS	Zero disturbance.
6	High+3	24/03/2017	13:00	KD	Quite warm, decent numbers of redshank in this area.
6	High+4	23/03/2017	13:05	KD	Few waders using exposed mud.
6	High+5	20/03/2017	10:10	KD	Previously drained lagoon partly refilled itself and pair of mute swans present on it. Counting difficult at times due to glare on water/sand.
6	Low	08/03/2017	15:10	SS	Zero disturbance.
6	Low+1	07/03/2017	14:40	SS	Zero disturbance.
6	Low+2	06/03/2017	14:20	SS	Zero disturbance.
6	Low+3	03/03/2017	12:50	KD	Pumps still operating on lagoon. Small boat/tug came through count area 13:13.
6	Low+4	02/03/2017	13:10	KD	Few birds on water. Only a few gulls on the lagoon still being drained.
6	Low+5	09/03/2017	09:05	SS	Large freight boat W-E through zone at 09:11 (flushed 4 WN).
7	High	09/03/2017	10:10	SS	Speed boat W-E through zone at 10:25 (didn't flush any birds).
7	High+1	08/03/2017	09:45	SS	Zero disturbance.
7	High+2	13/03/2017	15:30	KD	Few birds on water.
7	High+3	10/03/2017	14:25	SS	Zero disturbance.
7	High+4	24/03/2017	14:05	KD	Police boat passed through 14:29, wake moved 2 OC and 4 Teal from mud in survey area, 1 BH on near bank moved RK up bank but none left survey area. Good numbers of birds using the small area of exposed mud.
7	High+5	23/03/2017	14:10	KD	



CP Number	Tide status	Date	Count start time	Observer	Field notes
7	Low	20/03/2017	11:15	KD	
7	Low+1	01/03/2017	09:10	KD	Virtually no birds.
7	Low+2	07/03/2017	15:45	SS	Zero disturbance.
7	Low+3	06/03/2017	15:25	SS	Zero disturbance.
7	Low+4	03/03/2017	13:55	KD	Few Birds.
7	Low+5	02/03/2017	14:15	KD	60 BH on lagoon. Access east of CP7 blocked off to stop people coming onto site.

April 2017

CP Number	Tide status	Date	Count start time	Observer	Field notes
1	High	06/04/2017	09:15	SS	Zero disturbance.
1	High+1	21/04/2017	09:45	SS	Zero disturbance.
1	High+2	05/04/2017	10:10	RG	
1	High+3	03/04/2017	08:45	KD	Few birds, not much to report. Slightly late start (scheduled 08:40).
1	High+4	04/04/2017	10:50	KD	Very few birds. Water rough.
1	High+5	18/04/2017	10:30	RG	Near edge of river not in view - water too low.
1	Low	13/04/2017	08:45	SS	Zero disturbance.
1	Low+1	12/04/2017	09:20	SS	Zero disturbance.
1	Low+2	11/04/2017	09:35	KD	A few waders including greenshank.
1	Low+3	10/04/2017	10:05	RG	
1	Low+4				
1	Low+5	07/04/2017	09:45	SS	Zero disturbance.
3	High	07/04/2017	10:50	SS	Zero disturbance.
3	High+1	06/04/2017	10:20	SS	Zero disturbance.
3	High+2	21/04/2017	10:50	SS	Zero disturbance.
3	High+3	05/04/2017	11:15	RG	
3	High+4	03/04/2017	09:50	KD	Two council staff walked along sea wall, disturbed some redshank. Total of seven mute swans flew over survey area during count.
3	High+5	04/04/2017	11:55	KD	Relatively few birds on exposed mud - numbers obviously decreasing as season progresses.
3	Low	18/04/2017	11:35	RG	
3	Low+1	13/04/2017	09:50	SS	
3	Low+2	12/04/2017	10:25	SS	Zero disturbance.
3	Low+3	11/04/2017	10:40	KD	Good numbers of birds on exposed shore and creek.
3	Low+4	10/04/2017	11:10	RG	Curlew and oystercatcher flock frequently disturbed and then resettled in gusty conditions. Self arriving and police helicopter caused disturbance.
3	Low+5				
4	High				
4	High+1	07/04/2017	11:55	SS	Zero disturbance.
4	High+2	06/04/2017	11:25	SS	Zero disturbance.
4	High+3	21/04/2017	11:55	SS	Zero disturbance.
4	High+4	05/04/2017	12:20	RG	
4	High+5	03/04/2017	10:50	KD	Few birds.
4	Low	04/04/2017	KD	KD	SEPA survey boat passed through count area 13:04, no birds present/ seen to be disturbed. Few birds present.



CP Number	Tide status	Date	Count start time	Observer	Field notes
4	Low+1	18/04/2017	12:40	RG	
4	Low+2	13/04/2017	10:55	SS	Zero disturbance.
4	Low+3	12/04/2017	11:30	SS	Zero disturbance.
4	Low+4	11/04/2017	11:45	KD	Very few birds. Up to 5 birds heard from CP3 area 12:14-12:18. Some duck displaced from there but CP4 area unaffected.
4	Low+5	10/04/2017	12:15	RG	Large vessel down-river at 12:00, with 2 tugs - no disturbance.
5	High	10/04/2017	13:20	RG	
5	High+1				
5	High+2	07/04/2017	13:00	SS	Zero disturbance.
5	High+3	06/04/2017	12:30	SS	Zero disturbance.
5	High+4	21/04/2017	13:00	SS	Zero disturbance.
5	High+5	05/04/2017	13:25	RG	
5	Low	03/04/2017	11:55	KD	Freight ship passed through count area 12:15. Redshank displaced by wake briefly, remained in bay. Exceptionally low tide.
5	Low+1	04/04/2017	14:05	KD	Declining numbers of redshank over visits.
5	Low+2	18/04/2017	13:45	RG	4 dogs and people on far tideline but no birds to disturb.
5	Low+3	13/04/2017	12:00	SS	Zero disturbance.
5	Low+4	12/04/2017	12:35	SS	Zero disturbance.
5	Low+5	11/04/2017	12:50	KD	Few birds other than redshank.
6	High	11/04/2017	13:55	KD	c. 100 curlew flew up river over area 14:20. Very few (3) birds recorded in survey area. Freighter passed through count area 14:11, displaced the only 3 birds present, flew downstream. Police boat passed through count area 14:23 - no birds present to disturb. 1 grey seal present.
6	High+1	10/04/2017	14:25	RG	
6	High+2				
6	High+3	07/04/2017	14:05	SS	OP fishing at 14:14-14:18. Zero disturbance.
6	High+4	06/04/2017	13:35	SS	Zero disturbance.
6	High+5	21/04/2017	14:05	SS	Zero disturbance.
6	Low	05/04/2017	14:30	RG	Osprey over to the west.
6	Low+1	03/04/2017	13:00	KD	Police boat went through count area 13:19. A little displacement of gulls by wake, none left count area.
6	Low+2	04/04/2017	15:10	KD	Few birds on exposed mud.
6	Low+3	18/04/2017	14:50	RG	
6	Low+4	13/04/2017	13:05	SS	Zero disturbance.
6	Low+5	12/04/2017	13:40	SS	Zero disturbance.
7	High	12/04/2017	14:45	SS	Zero disturbance.
7	High+1	11/04/2017	15:00	KD	Swan nest by track between CP6+7, inland side by lagoon; female sitting, then off. Few birds in count area, water quite rough.
7	High+2	10/04/2017	15:30	RG	No birds within count zone.
7	High+3				
7	High+4	07/04/2017	15:10	SS	Zero disturbance.
7	High+5	06/04/2017	14:40	SS	Small boat 14:46 E-W through zone (no disturbance to birds).
7	Low	21/04/2017	15:10	SS	Medium sized boat W-E went through zone at 15:16 (no disturbance to birds).
7	Low+1	05/04/2017	15:35	RG	No birds within survey area.
7	Low+2	03/04/2017	14:05	KD	Ship passed through count area 14:08 -
7	Low+3	04/04/2017	16:15	KD	Tug passed through count area 16:15 - no disturbance seen. Virtually no birds present.
7	Low+4	18/04/2017	15:55	RG	



CP Number	Tide status	Date	Count start time	Observer	Field notes
7	Low+5	13/04/2017	14:10	SS	Zero disturbance.



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