Appropriate Assessment

Forth Road Bridge Maintenance Works

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amey consulting

TRANSPORT SCOTLAND

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Rev 0 - update from previous AIES template, and updated to account for disturbance to tern colony on Long Craig Island in 2018.	Name: Jennifer Reid Signature: [Redacted] Date: 09/12/2019	Name: Helen Craig Signature: Date: 18/12/2019	Name: Signature: Date:
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1. Introduction

1.1. Overview

As of the 01 June 2015, Amey became responsible for the operation and maintenance of the Forth Bridges (FB) Scottish Trunk Road Unit (STRU). The STRU FB Network covers the Forth Road Bridge and surrounding trunk roads in central Scotland.

Between 2015 and 2017, the mitigation detailed in Section 3.5 was suitable to prevent any impacts on qualifying species of the Forth Islands SPA, specifically the breeding tern colony on Long Craig Island. However, with the opening of the new Queensferry Crossing on 30th August 2017, the majority of traffic moved 300m west of the Forth Road Bridge/Long Craig Island which changed the baseline noise conditions experienced at Long Craig Island. The noise created by ongoing maintenance works therefore had a more significant impact than previously, which may have been a factor in the failure of the breeding colony in 2018. Amey's Local Investigation Plan is included in Appendix A.

Various programmed large maintenance schemes on the Forth Road Bridge are considered in this report.

1.2. Scope of this report

The aim of this Appropriate Assessment (AA) is to identify whether the proposed works are likely to have a significant impact upon any European site by determining if a site's conservation objectives will be compromised by the project. This report is an update of a previous Assessment of Implications on European Sites (AIES) issued in 2015, to include the most recent construction programme and species data for qualifying features. Ongoing mitigation measures will be reviewed to ensure minimal disturbance to the qualifying features. This document supports the Marine Licence currently in place for ongoing works on the structure (Appendix B).

1.3. Legislation and guidance

European sites are the network of protected sites developed under the European Commission Habitats Directive (Directive 92/43/EEC) (also referred to as Natura 2000 sites), which requires the establishment of designated Special Areas of Conservation (SAC) for habitats and species (except birds) and the Birds Directive (79/409/EEC) which similarly requires the establishment of Special Protection Areas (SPAs) for birds[1].

The Habitats Directive is transcribed into Scottish legislation by the Conservation (Natural Habitats, & c.) Regulations 1994 (as amended) under this a 'Habitats Regulations Appraisal' is required where a likely significant effect on the European site is predicted. There are slightly differing versions of the Regulations throughout the United Kingdom, although all are largely assessed in a similar method. Following recent case law, the screening assessment undertaken for projects is not to include any mitigation or avoidance measures, these are to be included in the Appropriate Assessment.

1.4. The Habitats Regulations Appraisal

Transport Scotland are the 'competent authority' undertaking the HRA, with Amey as the operating company on the STRU SE network carrying out the HRA on Transport Scotland's behalf. The competent authority, with advice from Scottish Natural Heritage (SNH), will decide if a project is likely to have a significant effect on any identified European sites.

Overview – the Four Stages

The European Commission guidance on the provision of Article 6(3) and 6(4) of the Habitats Directive 92/43/EEC recommends a four-stage approach in carrying out a Habitats Regulations Appraisal (Ref 1)[2].

1 In Scotland, all Ramsar sites are designated as SPAs, and whilst not a requirement of the HRA process SNH guidance notes that Ramsar interests are adequately protected by the HRA process. However, Ramsar sites are not specifically discussed in this report.
2 The European Commission's guidance for Managing Natura 2000 sites – The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC acknowledges the relationship between the Habitats Directive and Bird Directive, therefore the guidance can be applied to SPAs.

Each stage determines whether the next stage in the process is required, if for example, it is concluded at the end of Stage 1 that there is no ecological connectivity to the designated site to the works, or that there is not likely to be a significant effect on the qualifying features, then there is no requirement for Stage 2.

Stage 1 – Screening

Determines whether a plan or project, either alone or in combination with other plans or projects, is likely to have a significant effect upon a European site.

Plans and projects can be screened out at this stage if:

- There is clearly no ecological connectivity to the site's qualifying interests; or
- The works obviously won't undermine the conservation objectives for the qualifying interest to which it has a connection.

If the screening process identifies ecological connectivity and the potential for likely significant effects, potentially significant or uncertain effects, or if the screening process becomes overly complicated, then the process must proceed to Stage 2 (Ref 1).

Screening is undertaken without the inclusion of mitigation or standard control measures.

Even if the project is not considered to have likely significant effects alone, the in-combination effects of other plans and projects must also be considered at the screening stage.

Stage 2 – Appropriate Assessment

If likely significant effects are identified at stage 1, stage 2 then considers the impact of these effects on the integrity of the European site, again both alone and in combination with other plans or projects. Effects are considered with relation to the European site's structure and function and its conservation objectives. Additionally, where there is potential for adverse impacts and ecological connectivity, the Appropriate Assessment identifies the potential mitigation and standard control measures for those impacts.

Stage 3 – Assessment of Alternative Solutions

If a significant effect cannot be ruled out at Stage 2, but the competent authority wish to proceed with the project then stage 3 must be carried out.

Stage 3 examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the European sites. Alternative solutions can only be considered if they are financially, legally and technically viable options that have no or lesser effect on the European site.

Stage 4 – Assessment where no Alternative Solutions Exist and where Adverse Impacts Remain

If there are no alternate solutions and the competent authority still wish to proceed, then the HRA proceeds to stage 4.

Stage 4 requires an imperative reason of public interest for undertaking the plan or project which would override its potentially adverse effect on European site integrity. In practice the following principal steps should be used to establish whether there are imperative reasons of overriding public interest:

- Are the reasons imperative?
- Are the reasons in the long-term public interest?
- Is a priority habitat or species affected?
- Are the reasons overriding?

In the case that authorisation is given at this stage then compensatory measures must be considered, these must be clearly distinguished from mitigation measures.

2. European Sites

The European sites potentially affected by the scheme are[3]:

- Firth of Forth SPA (EU Code UK9004411); and,
- Forth Islands SPA (EU Code UK9004171).

2.1. Firth of Forth SPA

The Firth of Forth SPA is a complex of estuarine and coastal habitats in south east Scotland stretching east from Alloa to the coasts of Fife and East Lothian. The documented area of the site is 6313.72ha.

Key features

The Firth of Forth SPA includes extensive invertebrate-rich intertidal flats and rocky shores, areas of saltmarsh, lagoons and sand dunes. The site is underpinned by the Firth of Forth Site of Special Scientific Interest (SSSI).

Qualifying interest

The Firth of Forth SPA qualifies under Article 4.1 by regularly supporting wintering populations of European importance of the Annex 1 species: Red-throated diver *Gavia stellata*, Slavonian grebe *Podiceps auritus*, golden plover *Pluvialis apricaria* and bar-tailed godwit *Limosa lapponica*.

The site further qualifies under Article 4.1 by regularly supporting a post-breeding (passage) population of European importance of the Annex 1 species sandwich tern *Sterna sandvicensis*.

The Firth of Forth SPA qualifies under Article 4.2 by regularly supporting wintering populations of both European and international importance of the migratory species pink-footed goose *Anser brachyrhynchus*, shelduck *Tadorna tadorna*, knot *Calidris canutus*, redshank *Tringa totanus* and turnstone *Arenaria interpres*.

The Firth of Forth SPA further qualifies under Article 4.2 by regularly supporting a wintering waterfowl assemblage of European importance: comprising 45,000 wildfowl and 50,000 waders.

Conservation objectives

To avoid deterioration of the habitats of the qualifying species (listed above) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and to ensure for the qualifying species that the following are maintained in the long term:

- Population of the species as a viable component of the site
- Distribution of the species within site
- Distribution and extent of habitats supporting the species
- Structure, function and supporting processes of habitats supporting the species
- No significant disturbance of the species

Vulnerabilities

SNH assessed the site and stated the following vulnerabilities/negative pressures (Ref 2):

- Climate change (Waterfowl assemblage, Mallard, Knot, Grey Plover, Goldeneye, Curlew)
- Game/fisheries management (Waterfowl assemblage, Cormorant)
- Natural event (Great crested Grebe)

3 European sites are included if they are within 2km of the project, under the Design Manual for Roads and Bridges – Volume 11, Section 4 'Assessment of Implications on European Sites' (LA 115 Habitats Regulations assessment Rev 0).

- Recreation/disturbance (Waterfowl assemblage, Wigeon, Ringed Plover, Redshank, Mallard, Knot, Lapwing, Grey Plover, Goldeneye, Eider, Curlew, Bar-tailed Godwit)
- Water quality (Goldeneye)

Site condition

The site was last visited on 01/03/2015. The following species were assessed by SNH and determined as:

Favourable		Unfavourable
Maintained	**Declining**	**Declining**
▪ Bar-tailed godwit *Limosa lapponica* ▪ Cormorant *Phalacrocorax carbo* ▪ Curlew *Numenius arquata* ▪ Oystercatcher *Haematopus ostralegus* ▪ Pink-footed goose *Anser brachyrhynchus* ▪ Red-throated diver *Gavia stellata* ▪ Redshank *Tringa totanus* ▪ Ringed plover *Charadrius hiaticula* ▪ Sandwich tern *Thalasseus sandvicensis* ▪ Shelduck *Tadorna tadorna* ▪ Turnstone *Arenaria* sp. ▪ Velvet scoter *Melanitta fusca* ▪ Waterfowl assemblages ▪ Wigeon *Anas penelope* (recovered)	▪ Dunlin *Calidris alpina* ▪ Eider *Somateria mollissima* ▪ Grey plover *Pluvialis squatarola* ▪ Lapwing *Vanellus vanellus* ▪ Mallard *Anas platyrhynchos*	▪ Common scoter *Melanitta nigra* ▪ Golden plover *Pluvialis apricaria* ▪ Goldeneye *Bucephala clangula* ▪ Great crested grebe *Podiceps cristatus* ▪ Knot *Calidris canutus* ▪ Long-tailed duck *Clangula hyemalis* ▪ Red-breasted merganser *Mergus serrator* ▪ Scaup *Aythya marila* ▪ Slavonian grebe *Podiceps auritus*

Table 1: Site Condition of the Firth of Forth SPA

2.2. Forth Islands SPA

The Forth Islands SPA is a group of islands and single islands located in and near to the Firth of Forth. These include primarily Inchmickery, Fidra, Lamb, Craigleith, Bass Rock and the Isle of May, as well as smaller islands such as Long Craig. The documented area of the site is 9797.01ha.

Key features

The Forth Islands SPA supports important numbers of a range of breeding seabirds.

Qualifying interest

The Forth Islands SPA qualifies under Article 4.1 by regularly supporting breeding populations of European importance of the Annex 1 species:

- Arctic Tern *Sterna paradisaea*
- Common Tern *Sterna hirundo*
- Roseate Tern *Sterna dougallii*
- Sandwich Tern *Sterna sandivcensis*

The Forth Islands SPA qualifies under Article 4.2 by regularly supporting populations of European importance of the migratory species:

- Gannet *Morus bassanus*
- Lesser Black-backed Gull *Larus fuscus*
- Puffin *Fratercula arctica*
- Shag *Phalacrocorax aristotelis*

The Forth Islands SPA further qualifies under Article 4.2 by regularly supporting seabird populations of international importance, including during the breeding season. These include the species listed above and the razorbill *Alca torda*, common guillemot *Uria aalge*, black-legged kittiwake *Rissa tridactyla*, herring gull *Larus argentatus*, and great cormorant *Phalacrocorax carbo*.

Conservation objectives

To avoid deterioration of the habitats of the qualifying species (listed above) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and to ensure for the qualifying species that the following are maintained in the long term:

- Population of the species as a viable component of the site
- Distribution of the species within site
- Distribution and extent of habitats supporting the species
- Structure, function and supporting processes of habitats supporting the species
- No significant disturbance of the species

Vulnerabilities

SNH assessed the site and stated the following vulnerabilities/negative pressures (Ref 3):

- Inter-specific competition (Arctic tern, Razorbill, Seabird Assemblage)
- Climate change (Guillemot, Kittiwake, Puffin, Seabird Assemblage, Shag)
- Game/fisheries management (Guillemot, Kittiwake, Puffin, Razorbill, Seabird Assemblage)
- Proactive on-site management (Herring gull, Lesser black-backed gull)
- Invasive species (Puffin, Seabird Assemblage)
- Recreation/disturbance (Seabird Assemblage)

The biggest pressure on terns at Long Craig Island is lack of nesting space - flooding occurs and terns do not nest above high water mark (Ref 4). No records of predation on the island have been recorded.

Site condition

The condition of each qualifying species was last assessed by SNH on 23/06/2014, 30/06/2016 and 23/06/2017. The following species were assessed by SNH and determined as:

Favourable		Unfavourable
Maintained	**Declining**	**Declining**
▪ Gannet ▪ Guillemot ▪ Herring gull ▪ Lesser black-backed gull ▪ Razorbill	▪ Arctic tern ▪ Puffin ▪ Seabird assemblage	▪ Common tern ▪ Cormorant ▪ Kittiwake ▪ Roseate tern ▪ Sandwich tern ▪ Shag

Table 2: Site Condition of the Forth Islands SPA

Within the Forth Islands SPA, there are two common tern colonies on Long Craig Island and the Isle of May, and these colonies are likely to be supported by the colony outside of the SPA at Leith Docks (Ref 4).

Long Craig Island

The number of roseate terns breeding on Long Craig Island generally decreased between 1986 and 2014. There was one roseate tern present on Long Craig Island in 2014 during the breeding season. In 2015 and 2016, a mixed pair of roseate tern and common tern attempted to breed here, but the breeding success is unknown (Ref 5). No roseate terns were recorded on Long Craig Island in the breeding season in 2017 (Ref 4).

The size of the common tern breeding colony on Long Craig Island has been erratic, though it generally seems to be increasing. Between 1990 and 1999, the average number of tern nests on the island was 94, and between 2000 and 2009 the mean number was 101. In 2016, the maximum number of apparently occupied nests of common terns on Long Craig Island was 168, and there were 165 in 2017 (Ref 4).

Since the Forth Road Bridge was closed to general traffic (cars and HGVs) at the end of August 2017, the Firth of Forth Tern Warden for the Royal Society for the Protection of Birds' (RSPB) Roseate Tern LIFE Project, Chris Knowles (Ecologist at Where the wildstuff is…), noted that the success of the breeding tern colony on Long Craig Island was affected in 2018, and he recorded several incidents where noise from the works on the bridge caused the terns to dread4 (Appendix A). The noise from works was more obvious with reduced background noise levels.

The Firth of Forth Tern Warden provided Amey with his summary report for May-June 2019 (Appendix C). The report indicated that there were no nesting roseate terns on Long Craig Island during the 2019 breeding season, however a colony of common terns were nesting on the island. During the 2019 breeding season, the highest count of apparently occupied nests of common terns was 128 on 27th June, and all previously counted nests from earlier in the breeding season were noted to be intact.

4 When a colony of birds suddenly and quietly stirs and takes to the air in flight for a brief period, this is known as a "dread".

3. Project

3.1. Description of Projects

From the commencement of the contract in 2015, Amey have operated and maintained the Forth Road Bridge. The Forth Road Bridge spans approximately 2.5km between approximate National Grid References (NGR) NT 12480 78727 and NT 12582 80510, as shown in Figure 1.

The maintenance projects that have been undertaken to date have been carried out in line with the conditions set out within the Marine Licence (Appendix A). The marine licence conditions relevant to this report include:

- The licensee shall ensure a 'soft-start' approach is adopted for all noisy activities resulting in an increase of ≥3db in the ambient noise level at Long Craig Island;
- The licensee shall ensure noise does not exceed a maximum of 75db for works taking place within 400m of Long Craig Island between 1 May to August 15 (inclusive); and,
- The licensee shall, no later than 1 month prior to commencement of the works, submit a Construction Noise Management Plan (CNMP) for the written approval of the licensing authority in consultation with SNH and any other consultee at the discretion of the licensing authority. This should include, but not be limited to:
  - Specific monitoring and measures required to be undertaken by the licensee within 400m of Long Craig Island between 1 May to 15 August (inclusive);
  - Bi-monthly submission of noise reports during 1 May to 15 August (inclusive) the licensee shall notify the licensing authority of noise levels generated during the works within 400m of Long Craig Island. The noise reports shall include daily records, work stop/start records, delays and a summary of noise monitoring undertaken; and,
  - Written obligation to cease works where noise levels exceeds the maximum limit of 75db within 400m of Long Craig Island between May 1 to 15 August (inclusive). Works shall not continue until effective mitigation is put in place, and noise monitoring equipment is working.

There are various large scale maintenance/repair schemes to be undertaken during 2019/2020 on the Forth Road Bridge, and smaller maintenance and operational schemes. The larger scale projects are listed below:

- Suspended Span Underdeck Access Gantry scheme (currently ongoing);
- Main Expansion Joint Replacement (currently ongoing);
- Main Cable Inspection;
- Phase 3 of Truss End Link Repair;
- A90 FRB - Temporary Hanger Replacement;
- A90 FRB Side Tower Thrust Bearing and Rocker;
- A90 FRB - Site Specific Wind Loading;
- Suspended Span Painting and Strengthening; and,
- A90 FRB Suspended Span Assessment.

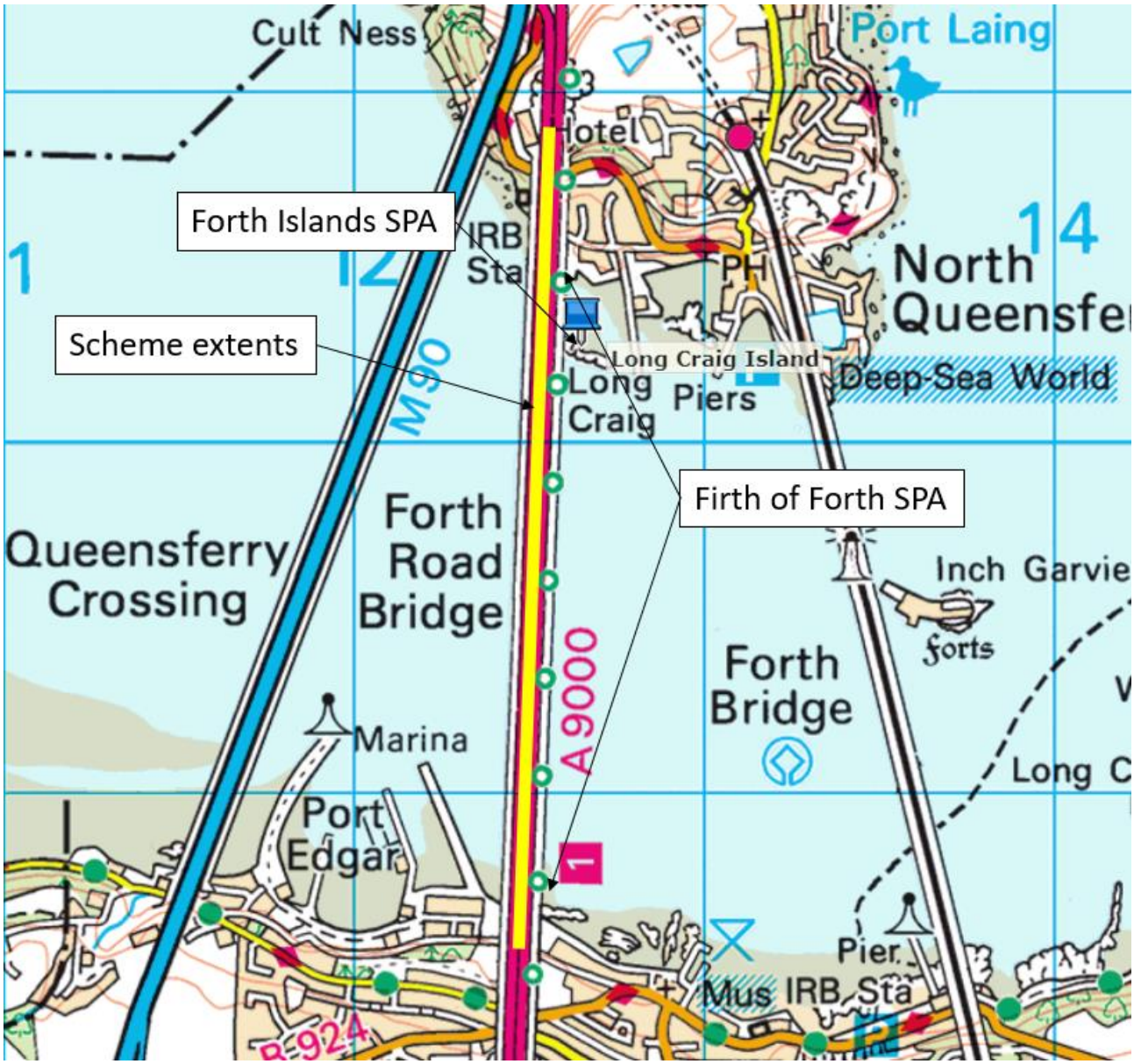

Figure 1: Scheme Location (Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown Copyright and database right 2019. All rights reserved. Ordnance Survey License number 100046668.)

None of the maintenance activities will require any resources from the Natura 2000 sites.

It is likely that certain activities will result in an increase in atmospheric particulate levels from plant, vehicle emissions and dust production. There is the potential for liquid discharges to be produced in relation to dust suppression. There is potential for noise emissions from some of the maintenance activities.

There will be shallow excavations undertaken on the bridge deck throughout the contract.

Works vehicles, plant and various materials will need to be transported to and from the site. They will use the existing transport network.

3.2. Duration

The works are scheduled over the duration of the five year contract until June 2020.

3.3. Distance from the European Sites

The bridge is located above both of the designated sites (Figure 1). The Firth of Forth SPA is directly underneath the southern bridge extents at approximate NGR NT 12480 78727, and directly underneath the northern bridge extents at approximate NGR NT 12582 80510.

Long Craig Island, part of the Forth Islands SPA, is directly beneath the northern bridge extents at approximate NGR NT 12569 80280 (Figure 2). Long Craig Island is a small island (approximately 2ha in area) and a very small part of the SPA, which is approximately 9797ha in area. The next closest part of the SPA is the water around Inchmickery, located approximately 5.8km to the east of Long Craig Island.

Figure 2: Long Craig Island (part of Forth Islands SPA) and the Forth Road Bridge as viewed from North Queensferry (August 2019)

3.4. HRA Screening

Likely significant effects

Firth of Forth SPA

Reduction of habitat area: Parts of the SPA lie directly underneath the north and south ends of the bridge. All maintenance works will take place on the bridge and no works will take place within the designated site, therefore there will be no reduction in habitat area. No likely significant effects predicted.

Disturbance to key species: Maintenance activities that generate noise or produce dust that are undertaken between November and February have the potential to disturb wintering birds. Likely significant effects cannot be ruled out at this stage.

Habitat or species fragmentation: No impacts predicted as all of the maintenance activities will take place on the bridge. No likely significant effects predicted.

Reduction in species density: Activities that cause disturbance may make wintering sites less attractive, which could reduce species density. Likely significant effects cannot be ruled out at this stage.

Changes in key indicators of conservation value (water quality etc.): There is potential for pollutants to enter the estuary. Likely significant effects cannot be ruled out at this stage.

Climate change: No impacts predicted, and therefore no likely significant effects anticipated.

Forth Islands SPA

Reduction of habitat area: The northern edge of the bridge lies above the SPA boundary; however, no works will be undertaken outwith the bridge footprint. There will be no reduction in habitat area. No likely significant effects predicted.

Disturbance to key species: There may be disturbance to breeding birds if noise intensive maintenance activities are undertaken within the bird nesting season. Likely significant effects cannot be ruled out at this stage.

Habitat or species fragmentation: No impacts predicted as all of the maintenance activities will take place on the bridge. No likely significant effects predicted.

Reduction in species density: Maintenance works during the breeding season could disturb nesting birds and cause a reduction in species numbers. Likely significant effects cannot be ruled out at this stage.

Changes in key indicators of conservation value (water quality etc.): There is potential for pollutants to enter the estuary. Likely significant effects cannot be ruled out at this stage.

Climate change: No impacts predicted, and therefore no likely significant effects anticipated.

In-combination effects

At this stage, there are no residual effects (those which are not likely significant effects) from the FB projects which could combine with residual effects from other nearby construction projects and lead to in-combination effects.

Outcome of screening

Likely significant effects on the SPAs as a result of accidental spillages, as well as increased dust, noise and vibration levels causing disturbance cannot be ruled out, so an Appropriate Assessment is required.

3.5. Mitigation and control measures

The following mitigation and control measures have been carried out, and will continue to be implemented until the end of the contract.

Noise emissions:

- All works should comply with BS5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites;
- Appropriate mufflers and silencers should be fitted to machinery. All exhaust silencers should be checked at regular intervals to ensure efficiency;
- Operatives should receive training to effectively employ techniques to reduce noise; and,
- Activities that cause high noise / vibration levels should be timed outwith the breeding bird season (March to August inclusive). Works should also be undertaken outwith peak activity times (early morning and evening). Birds will be particularly sensitive during these periods; therefore, the works program should be modified in advance to avoid the risk of disturbance.

Air quality and dust emissions:

- Restrict use of vehicles, plant and machinery to only necessary operation in order to reduce needless emissions;
- Prohibit idling vehicles, plant and machinery; and,
- Ensure excavated material is stored in accordance with current guidelines on dust suppression, in order to reduce the risk of creating airborne dust.

Ecology:

- Any required ornithological surveys must be undertaken by an ecologist prior to construction works;
- If any nesting birds are identified within and/or within close proximity to the bridge, works must be suspended and an Amey ecologist should be contacted;
- Where works are taking place at night, any lights used should be hooded and/or directed away from the surrounding area to avoid disturbing bird species; and,
- Toolbox talks will be provided to the construction team in relation to birds, to increase awareness of legislation.

Emissions to water bodies and drainage:

- Fuel, oil and chemicals stored on site can impact greatly on the water environment, therefore proper storage is required to minimise pollution risk;
- Spill kits should be available on site and site teams should be trained in their use;
- The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (as amended) must be adhered to;
- The following Pollution Prevention Guidelines must be followed:
  - Pollution Prevention Guidance (PPG) PPG8-Safe Storage and disposal of used oil;
  - Managing fire water and major spillages: PPG18;
  - Dealing with spills: PPG22;
  - Works and maintenance in or near water: PPG5;
  - Fresh concrete and cement are very alkaline and corrosive and can cause serious pollution. Concrete and cement mixing and washing areas should:
    - Be sited 10m from any watercourse or surface water drain to minimise the risk of run-off entering a watercourse;
    - Have settlement and re-circulation systems for water reuse to minimise the risk of pollution and reduce water usage;
    - Have a contained area for washing out and cleaning of concrete batching plant or ready mix lorries;
    - Collect wash waters and, where necessary, discharge to the foul sewer (must have permission from the local sewerage undertaker for this), or contain wash water for authorised disposal off site; and,
    - Wash waters from concrete and cement works should never be discharged into the water environment.

- A suitable pollution containment method should be used to reduce the risk of pollutants entering the water environment; and,
- Best practice will be applied by referring to method statements and risk assessments for substances and materials used during construction.

Waste:

- No vegetation or spoil waste should be dumped into the estuary.

All mitigation measures described above are tried and tested, and are in accordance with best practice guidance to ensure pollutants do not enter the river course. These measures will also ensure that disturbance to species using the Forth of Forth is minimised as far as possible and there will be no significant impact on them.

Additional mitigation measures post-2018

Following disturbance to the breeding tern colony on Long Craig Island towards the end of the breeding season in 2018, Amey Ecological Clerks of Works (ECoW) have been periodically monitoring the tern colony during works on the bridge within the breeding season. This has coincided with temporary noise monitoring of the works, so that observations can be tied in with the corresponding noise levels.

Assistant Environmentalists (Ecologists) Jennifer Reid BSc (Hons) MSc and Ryan Ward BSc (Hons) acted as ECoW during the works in July and August 2019. Maintenance works at the northern side of the Forth Road Bridge i.e. in the vicinity of Long Craig Island, during this period included expansion joint replacement. Whilst the ECoW was present, no works were taking place directly above Long Craig Island, they were closer to the northern shore. Occasional noises were heard from the bridge including drilling and hammering. Occasionally large numbers of the tern colony were observed flying into the air simultaneously, however this was always short-lived and the birds were calling rather than silent. Also, this never coincided with any loud or sudden noises from the works on the bridge or the surrounding area. The ECoW's field notes from July and August 2019 are included in Appendix D.

During the 2019 noise monitoring, the equivalent continuous sound level (L_{Aeq}) threshold of 75dB, which is set out within the Marine Licence, was not exceeded. The LAeq varied between 52.1dB and 70.3dB during the four monitoring visits. A summary of the noise measurement data is included within the Construction Noise Management Plan (CNMP) (Ref 6).

Amey are in possession of permanent noise monitoring equipment, which will be installed at/near the Forth Road Bridge in 2020. This will be in place between 1 May and 15 August, and will be set to notify a noise specialist if the selected noise threshold is exceeded, and live data can be remotely checked on a website. The protocol for any exceedances of noise levels is:

- If the LAeq exceeds 75dB (Red Alert), then the acoustician will contact the Site Supervisor to stop the works. Check that all mitigation within the CNMP has been implemented. Additional mitigation maybe required before works commence.
- Site Supervisor should implement the measure by next shift if night time working, if daytime working then as soon as is practicable.
- This should be reported as Non-Conformity which the client will be able to review and Amey's Environment Incident register – Airsweb. Both systems require Corrective and Preventative Actions to be in place to close the Non-Conformity.
- This will be managed through site inspections, internal communication, incident reports and auditing findings. All reporting/findings will be provided to Marine Scotland.

Further information is included in the CNMP (Ref 6).

Mechanisms for delivery

The following mechanisms have/will be implemented: construction method statements, construction noise management plan, Marine Licence, toolbox talks to contractor and engineers.

4. SNH Response

The SNH Operations Officer for the Forth was consulted regarding the project in August 2019. They indicated that further consultation is required with SNH if noisy works must be carried out during the breeding season. Additional active monitoring by surveyors is likely to be requested, in order that a link can be established between types of noisy works and disturbance to the tern colony.

5. Appropriate Assessment

5.1. Firth of Forth SPA

Table 3 sets out the Appropriate Assessment of the project and identifies any likely significant effects that may undermine conservation objectives of any qualifying species or habitats. Likely significant effects are identified by using the source-pathway-receptor model, where there would need to be a source of potential impact and a pathway to the European site to enable the impact to occur.

SPA Conservation objectives:	**Qualifying features**	**Condition**	**Possible effect of project**
To prevent deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and to ensure for the qualifying species that the following are maintained in the long-term: ▪ The population of the species as a viable component of the site. ▪ The distribution of the species within the site. ▪ The distribution and extent of the habitats supporting the species. ▪ The structure, function and supporting processes of habitats supporting the species. ▪ No significant disturbance of the species	Red-throated diver *Gavia stellata*	Favourable Maintained	Disturbance to key species: Some maintenance activities may increase noise and vibration levels over short periods of time, which may disturb wintering/migratory birds in the surrounding area. Additional noise mitigation measures may be required for individual maintenance schemes along with noise monitoring. No likely significant effect anticipated with mitigation measures in place as outlined in Section 3.5. Disruption: no likely significant effect anticipated with mitigation measures in place as outlined in Section 3.5. Change to key elements of the site (e.g. water quality): significance of effect likely to be insignificant with mitigation measures in place as outlined in Section 3.5. Interference with the key relationships that define the structure of the site: No likely significant effects predicted. Interference with key relationships that define the function of the site: No likely significant effects predicted.
	Slavonian grebe *Podiceps auritus*	Favourable Declining	
	Golden plover *Pluvialis apricaria*	Favourable Maintained	
	Bar-tailed godwit *Limosa lapponica*	Favourable Declining	
	Sandwich tern *Sterna sandvicensis*	Favourable Declining	
	Pink-footed goose *Anser brachyrhynchus*	Favourable Maintained	
	Shelduck *Tadorna tadorna*	Favourable Declining	
	Knot *Calidrus canutus*	Unfavourable Declining	
	Redshank *Tringa tetanus*	Favourable Maintained	
	Turnstone *Arenaria interpres*	Favourable Maintained	
	Great crested grebe *Podiceps cristatus*	Unfavourable Declining	
	Cormorant *Phalacrocorax carbo*	Favourable Maintained	
	Scaup *Aythya marila*	Unfavourable Declining	
	Eider *Somateria mollissima*	Favourable Declining	
	Long-tailed duck *Clangula hyemalis*	Unfavourable Declining	
	Common scoter *Melanitta nigra*	Unfavourable Declining	
	Velvet scoter *M. fusca*	Favourable Maintained	
	Goldeneye *Bucephala clangula*	Unfavourable Declining	
	Red-breasted merganser *Mergus serrator*	Favourable Declining	
	Oystercatcher *Haematopus ostralegus*	Favourable Maintained	

	Ringed plover *Charadrius hiaticula*	Favourable Maintained	
	Grey plover *Pluvialis squatarola*	Favourable Declining	
	Dunlin *Calidris alpine*	Favourable Declining	
	Curlew *Numenius arquata*	Favourable Maintained	
	Wigeon *Anas penelope*	Favourable Recovered	
	Mallard *A. platyrhynchos*	Unfavourable Declining	
	Lapwing *Vanellus vanellus*	Favourable Maintained	

Table 3: Appropriate Assessment for the Firth of Forth SPA

5.2. Forth Islands SPA

Table 4 sets out the Appropriate Assessment of the project and identifies any likely significant effects that may undermine conservation objectives of any qualifying species or habitats. Likely significant effects are identified by using the source-pathway-receptor model, where there would need to be a source of potential impact and a pathway to the European site to enable the impact to occur.

SPA Conservation objectives:	**Qualifying features**	**Condition**	**Possible effect of project**
To prevent deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and to ensure for the qualifying species that the following are maintained in the long term: ▪ The population of the species as a viable component of the site. ▪ The distribution of the species within site. ▪ The distribution and extent of habitats supporting the species. ▪ The structure, function and supporting	Common tern *Sterna hirundo*	Favourable Maintained	Disturbance to key species: the maximum number of adults on common tern nests on Long Craig Island has decreased by almost a quarter since the 2017 breeding season, although it has been generally increasing since 1990. The main threat/pressure on the key species seems to be lack of available space, worsened by flooding. No likely significant effects are predicted as a result of the works with mitigation measures in place as outlined in Section 3.5, including active monitoring of the common tern colony on Long Craig Island by an Ecological Clerk of Works (ECoW) during works on the bridge within the breeding season. Further consultation is required with SNH to agree monitoring methods and programme. This will ensure that if any disturbance to the terns is noted as a result of works on the bridge, works can be stopped until a better way of working can be implemented. Noise monitoring will be undertaken at the same time as ECoW
	Fulmar *Fulmarus glacialis*		
	Gannet *Morus bassanus*		
	Guillemot *Uria aalge*		
	Herring gull *Larus argentatus*		
	Lesser black-backed gull *Larus fuscus*		
	Puffin *Fratercula arctica*		
	Razorbill *Alca torda*		
	Arctic tern *Sterna paradisaea*	Favourable Declining	
	Cormorant *Phalacrocorax carbo*		
	Shag *Phalacrocorax aristotelis*	Unfavourable Recovering	
	Kittiwake *Rissa tridactyla*	Unfavourable Declining	
	Roseate tern *Sterna dougallii*		
	Sandwich tern *Sterna sandvicensis*		

processes of habitats supporting the species. ▪ No significant disturbance of the species	Seabird assemblage		monitoring, to try to determine the noise threshold of disturbance. Supposing the works did have a likely significant effect on the key species of Long Craig Island, there is a breeding tern colony on the Isle of May which would not be affected by the works on the Forth Road Bridge, and the SPA population is also supported by a colony of common terns at Leith Docks. Therefore, there would be no likely significant effect on the integrity of the SPA as a whole. Disruption: significance of effect likely to be insignificant with mitigation measures in place as outlined in Section 3.5. Change to key elements of the site (e.g. water quality): significance of effect likely to be insignificant with mitigation measures in place as outlined in Section 3.5. Interference with the key relationships that define the structure of the site: No likely significant effects predicted. Interference with key relationships that define the function of the site: No likely significant effects predicted.

Table 4: Appropriate Assessment for the Forth Islands SPA

5.3. Cumulative Effects

A search on Fife Council's 'Simple Search' facility (Ref 7) found planning applications for nearby construction projects which are yet to be initiated including the erection of a single dwelling house, alterations to existing dwelling houses, erection of a domestic outbuilding, display of signage and change of land use from a public open space to a multi-use games area with floodlighting. Should any of these projects coincide with works on the Forth Road Bridge, there are not expected to be any cumulative effects on the SPAs since all of these schemes are very small in scale.

A search on City of Edinburgh Council's 'Simple Search' facility (Ref 8) found planning applications for nearby construction projects which are yet to be initiated, including a small extension to an industrial building, dwelling house alterations, single tree removal, and Port Edgar Yacht Club redevelopment including construction of a modular building, dingy parking and external landscaping. Again, these schemes are considered to be small in scale and so no cumulative effects are expected should these schemes coincide with works on the Forth Road Bridge.

Amey do not currently have any upcoming projects close to the SPAs in the vicinity of the Forth Road Bridge.

5.4. Outcome of Appropriate Assessment

No adverse effects on the Firth of Forth SPA or Forth Islands SPA as a result of the works are predicted, with the implementation of mitigation and control measures as described in Section 3.5. It is therefore considered that there is no requirement for further mitigation or assessment at this stage.

Should noisy works be required to be undertaken within the tern breeding season, further consultation will be undertaken with SNH to agree the best way forward.

6. References

Ref 1: Managing Natura 2000 Sites – The provision of Article 6 of the 'Habitats' Directive 92/43/EEC. Available at: http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/Provisions_Art_._nov_2018_endocx.pdf

Ref 2: Scottish Natural Heritage (SNH) SiteLink - details about the Firth of Forth SPA. Available at: https://sitelink.nature.scot/site/8499

Ref 3: SNH SiteLink - details about the Forth Islands SPA. Available at: https://sitelink.nature.scot/site/8500

Ref 4: RSPB Nature Recovery Unit, *EU LIFE Roseate Tern Recovery Project: Annual Site Breeding Report 2017, Draft Report* (April 2018). Available at: http://roseatetern.org/reports.html

Ref 5: RSPB Nature Recovery Unit, *EU LIFE Roseate Tern Recovery Project: Annual Site Breeding Report 2016* (February 2017). Available at: http://roseatetern.org/reports.html

Ref 6: Amey, Construction Noise Monitoring Plan - Forth Road Bridge, Ref. FBUnit-Plans-PL-060 Rev.2.0, December 2019

Ref 7: Fife Council 'Simple Search' facility. Available at: https://planning.fife.gov.uk/online/search.do?action=simple

Ref 8: City of Edinburgh Council 'Simple Search' facility. Available at: https://citydev-portal.edinburgh.gov.uk/idoxpa-web/search.do?action=simple&searchType=Application

Appendix A: Amey's Local Investigation Report - Tern Disturbance

LOCAL INVESTIGATION REPORT

FORTH BRIDGES UNIT

AIRSWEB REFERENCE:	372730	**DATE OF INCIDENT:**	31/07/2018
LOCATION OF INCIDENT:	Forth Road Bridge		
BUSINESS UNIT:	Highways	**CONTRACT/ACCOUNT:**	Forth Bridges Unit
INVESTIGATOR / AUTHOR:	Malcolm Bryson	**DATE OF REPORT:**	17/09/2018
STATUS OF REPORT:	☒ Draft	☐ Issued for Action	☐ Closed Out
SIGN OFF I confirm that this report is an accurate reflection of events and causes, and undertake to complete the agreed recommendations.			
Signed:		Date:	

Outcome of the Incident

Regulatory contact resulting from potential disturbance of breeding colony of Roseate Terns *Sterna dougallii* on Long Craig Island SSSI.

Incident Description

On 31st July Chris Knowles (on behalf of RSPB) raised concerns over a number of incidents observed whilst undertaking monitoring work on Long Craig Island related to Amey operations on the Forth Road Bridge:

- Use of pneumatic/automatic hammer on 10th July, causing terns to dread
- Item dropped from bridge 26th July 2018, causing terns to dread
- Hammering noise 30th July 2018 – no adult terns observed

These incidents were escalated via the Scottish Wildlife Trust to Scottish Natural Heritage who in turn raised the issue with Amey. All of this is understood to have taken place on 31st July 2018.

Amey also engaged Marine Scotland who raised concerns over the Habitat Regulations Assessment and Construction Noise Management Plan incorporated into the application for Amey's Marine Licence. It was agreed that a meeting involving all relevant stakeholders should be held to establish appropriate action. Using the dates provided in the original report, Amey produced a summary of works being undertaken which may have been taking place when the incidents referred to above were taking place. This is shown in Appendix 1.

A meeting was held on 21st August 2018 with representatives from Marine Scotland, SNH, Wildstuff/RSPB, Scottish Wildlife Trust and Amey. Minutes and actions from this meeting can be found in Appendix 2. Those responsible for carrying out monitoring on the site (Scottish Wildlife Trust) presented Amey personnel with a selection of items which may have dropped from the structure; highlighting health and safety risks associated with monitoring activities.

Immediate Cause(s)

Individual instances of excessive noise and falling objects causing Roseate terns to dread from Long Craig Island Site of Special Scientific Interest.

Underlying Cause(s)

Excessive noise resulted from the use of noisy equipment during works on the bridge. All equipment in use on the bridge is included in the Construction Noise Management Plan, with monitoring assessment showing that noise levels are below the 75dB threshold set out in the Marine Licence. Monitoring data supports this assessment. This introduces the additional possibility that equipment which is not included in the CNMP has been used, or that the assessments could be inaccurate. The witnessing of falling objects suggests that existing control measures are not completely effective.

Root Cause(s)

- There is no requirement within the Marine Licence to carry out noise monitoring on all works, leading to the potential for the production of unintentional excessive noise where monitoring is not being undertaken.
- Equally however, it is possible that the 75dB threshold is not appropriate for the circumstances and that disturbance could occur below this level.
- Control measures in place to prevent objects from falling from the structure in some instances have either not been effectively communicated or have not been implemented upon communication of the requirements.

Contributory Factors

- Lack of clarity in roles and responsibilities regarding the implementation of the CNMP
- Limited document control to allow sufficient flexibility for changes in circumstances (such as changes in background noise levels, changes in roles and responsibilities, changes programmes and work types).
- The communication of requirements of Marine Licence within Amey and to subcontractors could be improved.

Amey's role under CDM Regulations

The incidents relate to Amey's management of the Forth Road Bridge structure as a whole, where Amey hold different roles under CDM Regulations depending on the individual scheme being undertaken.

Re-Training / Sanctions / Disciplinary Proceedings

As described in the recommendations below, an environmental briefing will be produced, to be communicated beyond the Forth Bridges Unit to the wider business and appropriate supply chain partners.

Amey Highways (in Scotland) have also committed to rolling out a programme of general environmental awareness training. When being undertaken at the Forth Bridges Unit, this will be tailored to include the requirements of the Marine Licence, Habitat Regulations Assessment and Construction Noise Management Plan.

No disciplinary action will be taken and no sanctions applied in this instance.

Other Issues Found During the Investigation

All issues worthy of note have been referred to in the sections above.

Recommendations

(NB: All recommendations / actions are to be recorded and tracked to closure on AIRSWEB)

NO.	CAUSE PARA REF.	RECOMMENDATION	ASSIGNED TO	AGREED TARGET DATE
1	N/A	HRA to be updated to take into account changed circumstances, in consultation with Scottish Natural Heritage.	Lorna McRae (Amey Environment and Sustainability Team)	01/05/2019
2	N/A	Existing species monitoring data to be provided to Amey for update of HRA.	Chris Knowles (Wildstuff)	01/05/2019
3	N/A	Further investigation into contractor site diaries to establish specific timing of incidents.	Graeme Shepherd (Amey Consulting)	
4	N/A	Ecologist to attend all future noise monitoring activities	Lorna McRae/Nicola Sim (Amey Environment and Sustainability Team)	01/05/2019
5	N/A	Amey to produce business case for permanent monitoring installation for submission to Transport Scotland (including installation of camera).	Graeme Shepherd (Amey Consulting) / John Russell (Amey Highways)	01/05/2019
6	N/A	Programme of works to be reviewed by environmental team in order to establish programme for monitoring of noisy equipment.	Nicola Sim (Amey Environment and Sustainability Team)/ Graeme Shepherd (Amey Consulting)	01/05/2019
7	N/A	CNMP to be reviewed and once completed, added to the IMS document library and subject to annual review.	Nicola Sim (Amey Environment and Sustainability Team)	01/05/2019
8	N/A	Details of Marine Licence to be reviewed.	Malcolm Fraser (Scottish Natural Heritage) / Malcolm Rose (Marine Scotland)	01/05/2019
9	N/A	Amey to conduct a review of safe-guards in place to prevent falling objects – with particular reference to members of the public operating below the structure.	Graeme Shepherd (Amey Consulting) / John Russell (Amey Highways)	01/05/2019
10	N/A	Amey Highways to issue environmental bulletin in reference to the incident to aid efforts in preventing re-occurrence.	Malcolm Bryson (Highways HSEQ)	01/10/2018

Appendices

Appendix 1: Summary of works

Appendix 2: Meeting minutes (21.08/2018)

Appendix 3: Correspondence leading to contact by SNH with Amey

Appendix 4: Location plan

Revision history

VERSION	DATE	AMENDMENTS	OWNER	AUTHORISER
1.0	04/08/2017	New document	Group Quality Business Partner	Group HSEQ Director

Initial Investigation into Work Schedule

	C. Spencer Ltd **Truss End Link Replacement (Works Contract)**	**American Bridge Ltd** **Main Cable Inspection (Works Contract)**	**Amey Maintenance**
26th July 2018	**North East Tower** – Scaffold modifications by Span Access **North West tower** – External painting works to new truss section, installation of scaffolding internally and construction of platform on North East side span	**PP100 to 100 East** – Driving in of brass wedges for cable inspection **PP78-80 North West** – Driving in of wedges for cable inspection	**PP42 North West** – Cable hanger painting by hand (use of generator)
30th July 2018	**North East Tower** – No works on this date at this location **North West tower** – Bristle blasting removal of paint system from internal surfaces of the main tower and hanger alterations.	**PP78-80 North West** – Driving in of wedges for cable inspection **PP54-56 South West** – scaffold works, with possible use of stihl saw for a short time	**PP22 North East & North West** – Painting (Top Coat) **PP00 to 04** – Hanger painting low level (hand wash/hand paint) **PP42 North East** – Cable hanger painting by hand (use of generator) **PP24 North West** – Preparation for half joint jack & pack. Use of angle grinder – 120 mins logged on timesheet

Agenda

Meeting Title:
Long Craig Island, Tern Disturbance

Meeting Organiser:	**Start Date:**	**Start Time:**
John Russell, Operations Manager	21/08/2018	1pm
Meeting Location:	**End Date:**	**End Time:**
Forth Road Bridge Meeting Room	N/A	3pm

Objective:
Discussion of present and future management of noise levels on the Forth Road Bridge in relation to the protection of Roseate Tern habitat on Long Craig Island.

Attendees: Angus Bruce (Amey) – Major Bridge Manager
John Russell (Amey) – Operations Manager
Graeme Shepherd (Amey) – Senior Engineer
Nicola Sim (Amey) – Senior Environmentalist
Lorna McRae (Amey) – Ecologist
Malcolm Rose – Marine Scotland
Malcolm Fraser – SNH
Chris Knowles – Wildstuff
Rory Sandison – Scottish Wildlife Trust

Apologises: Malcolm Bryson (Amey)-HSEQ Manager Environment and Sustainability

Please read: N/A

Please bring: N/A

Agenda Items

	Time Start	Description	Presenter
1.	1:00 pm	Introductions and purpose of meeting	All
2.		Scottish Wildlife and SNH to define the issues Background to the terns – Long Craig island	All
3.		Identify actions, leads and programme to prevent tern disturbance - Noise monitoring (permanent and temporary) - Construction noise management plan - Marine Licence conditions	All

	Action Title	Action Owner
1.	CK, Wildstuff monitors the terns breeding numbers and behaviour within Long Craig Island, Special Protection Area (SPA) on behalf on the Scottish Wildlife Trust. CK stated that up until 10th July there was no disturbance throughout the terns breeding season 1st May to the 15th August until the 10th July. CK noticed a disturbance from a pneumatic hammer noise whilst on site. Further disturbance was recorded 26th July and the 30th July from similar noises.	
2.	CK provided evidence that the nesting site and chick rearing was unsuccessful this breeding season. Roseate terns, have not successfully bred on the island since 2008. Common terns are the main breeding colony. Sandwich terns are declining.	
3.	CK detailed two incidents: 1. Health and Safety issue. – Issue with debris falling from the bridge onto the island causing disturbance. Included a radio from members of the team. CK recovered all the materials from the island after the breeding season and handed back to Amey Operations Team. Health and Safety issue. 2. Construction Noise – in particular on; 10th 26th and 30th July.	
4.	NS asked RS and CK if they could provide the terns monitoring data to Amey for background information for updating HRA. RS and CK agreed that this can be shared. Further discussion will be undertaken.	CK, NS and LM
5.	Further investigation into the contractor's diaries for the above dates to match the timing of disturbance.	GS (Amey)
6.	NS provided tables of noise levels recorded at surrounding locations of Forth Road Bridge as per the Construction Noise Monitoring Plan and Marine Licence conditions. These were below the 75dB threshold. It was noted by MF that a disturbance of bird species may be below the 75dB.	
7.	NS asked for MF to provide a bit of background of were the 75dB (Marine Licence) derives from. It was noted that this was from SNH's ornithological team. This can be a trial and error figure and 75dB isn't the exact level of disturbance.	
8.	GS reiterated that CK to continue with the procedure of checking in and around the FRB Unit, when undertaking monitoring of the terns from the Forth Road Bridge.	
9.	CK and RS, asked would it be possible that a ECoW or ranger could be on site full time during the terns breeding season. JR stated this couldn't happen. LM added that when the noise surveys were being planned that an Ecologist would accompany the noise team.	NS and LM will organise prior to survey.
10.	Amey, suggested to SNH and SWT the installation of a remote permanent noise monitoring system to be erected on the SPA. All parties came to the conclusion this wasn't a good idea. Therefore, Amey concluded that it could be mounted beneath the forth road bridge directly above Long Craig Island, where it was demonstrated that this is the breeding site upon the island Or alternatively on the bridge North tower pier defences or the North shore nearest the island. JR and GS, to carry out a business case for Transport Scotland to consider a permanent remote noise meter, including a camera to provide evidence	Amey

	Action Title	Action Owner
	and linkage of noise activity to disturbance of the terns. Amey hopes this can be in place for the next breeding season, 1/5/2019. Discussed the benefits of SWT and other Statutory bodies being able to use the noise data. Possibilities of using a red, amber, green system where the noise levels can be triggered and monitoring from the Office.	
11.	Amey Environmental Team will liaise with Operation Team at Forth Bridge Unit to discuss the programme of works left up until 2020 (end of Marine Licence). From this we can identify noisy plant/equipment and undertake noise measurements when in operation.	Environmental Team and Operations Team
12.	LM will provide a revised HRA in consultation with SNH.	LM
13.	In conjunction with the HRA, NS and MF(SNH), will undertake a review of Construction Noise Management Plan (CNMP) to include any new work and any plant/equipment.	NS
14.	MF and MR said they will discuss the any revisions to the Marine Licence conditions and paperwork separately.	MF and MR
15.	All parties agreed that all actions will be undertaken before the 1st May 2019 (start of the breeding season).	All

Reid, Jennifer

From: Sarah Eaton <Sarah.Eaton@nature.scot>
Sent: 31 July 2018 12:02
To: Russell, John
Subject: FW: SSSI consent for works taking place on the Forth Road Bridge in the vicinity of Long Craig Island
Attachments: HRA - FRB Paint Trial Final.pdf; FRB Marine licence.pdf; Construction Noise Management Plan Draft Ver 0.pdf; A2576036.obr; SSSI consent for works taking place on the Forth Road Bridge in the vicinity of Long Craig Island - SNH response - 23 February 2018.obr; FW: *IMPORTANT* Long Craig disturbance

John, find attached and below correspondence regarding the works on Forth Road Bridge.

I would be grateful if you could investigate and address the concerns that SWT have.

Kind regards
Sarah

Sarah Eaton | Operations Officer
Scottish Natural Heritage I 46-48 Crossgate I Cupar I Fife I KY15 5HS I **t**:01738 458804 **m**: 07557 499472
Dualchas Nàdair na h-Alba | 46-48 Sràid na Croise| Cùbar | Fìobha | KY15 5HS
nature.scot – Connecting People and Nature in Scotland – @nature_scot

Please note that all SNH email addresses have changed.
My email has now changed to sarah.eaton@nature.scot

From: Wells, Conor [mailto:Conor.Wells1@amey.co.uk]
Sent: 27 March 2018 11:26
To: Sarah Eaton
Subject: RE: SSSI consent for works taking place on the Forth Road Bridge in the vicinity of Long Craig Island

Hi Sarah,

As part of our continued maintenance commitments and in line with our clients requirements, as a matter of course we undertake both an HRA and Record of Determination for all proposed works contracts due the sensitive of the underlying marine environment and associated designations. Additionally, there is currently a Marine License in place covering all maintenance works on the bridge, including painting operations. As part of our obligations in line with the Marine License we undertake regular noise monitoring, which is outlined in our Construction Noise Management Plan (CNMP). It is intended that due to the location of the proposed works, monitoring outlined in the CNMP would be increased.

I have attached both the HRA, Marine License and CNMP for your consideration.

Regards,

Conor Wells

Assistant Environmentalist | Environment & Sustainability | Consulting
t 0131 314 3093 | **e** conor.wells1@amey.co.uk

Amey | 6 Redheughs Rigg | South Gyle | Edinburgh | EH12 9DQ

From: Sarah Eaton [mailto:Sarah.Eaton@snh.gov.uk]
Sent: 23 February 2018 11:46
To: Wells, Conor <Conor.Wells1@amey.co.uk>
Subject: SSSI consent for works taking place on the Forth Road Bridge in the vicinity of Long Craig Island

Dear Conor,

Thank you for getting in touch with SNH about works which are to take place on the Forth Road Bridge, close to Long Craig Island SSSI.

Long Craig Island is an SSSI, and also part of Forth Island Special Protection Area (SPA), for its breeding terns.

The nesting season for the terns is mid-April till August so due to the proximity you will have to do an assessment of the impacts (mainly noise) on the terns to determine whether there would be a likely significant effect on the SPA, and if so, if there would be an adverse effect on the site and its conservation objectives. The assessment would propose suitable mitigation.

Do you need to apply for permissions from a competent authority, e.g. Marine Scotland or Transport Scotland? You would need to supply enough information so that they can carry out a Habitats Regulations Appraisal (HRA). They would then consult us on it.

I see that the works are trials – is there any way of carrying out the works on the south span of the bridge? This would avoid disturbance to the birds and negate the need for an HRA. If this isn't possible, could the timing be changed so that the works are taking place after the terns have bred? If the colony fails at breeding, as it sometimes does, you could bring forward the works. This would involve liaison with the Fife Bird Club http://www.fifebirdclub.org/ who manage the island on behalf of Scottish Wildlife Trust, and monitor the birds.

There's more information about HRAs on our website: https://www.nature.scot/professional-advice/planning-and-development/environmental-assessment/habitats-regulations-appraisal-hra and there's information on the SSSI and Forth Islands SPA on our Sitelink pages. https://gateway.snh.gov.uk/sitelink/

I hope this helps. Please get back in touch if you need more information.

Regards

Sarah Eaton, Operations Officer, Scottish Natural Heritage, 46 Crossgate, Cupar, KY15 5HS

Tel: 01334 654038

Scottish Natural Heri
Dualchas Nàdair na h

– –

Location Plan – Long Craig Island

Appendix B: Marine Licence

marinescotland

The Scottish Government

T:+44 (0)1224 295579 F: +44 (0)1224 295524
E: MS.MarineLicensing@scotland.gsi.gov.uk

MARINE (SCOTLAND) ACT 2010, PART 4 MARINE LICENSING

LICENCE FOR MARINE CONSTRUCTION WORKS

Licence Number: 05568/15/0 Reference Number: 05568

Scottish Ministers (hereinafter referred to as "the licensing authority") hereby authorise:

Transport Scotland
Buchanan House
58 Port Dundas Road
Glasgow
G4 0HF

to deposit in the sea the substances or objects (except for dredge spoil) used in the execution of works described in Part 1 of the attached Schedule. The licence is subject to the conditions of use set out, or referred to, in Part 2 of the said Schedule.

This licence shall be valid from 22 October 2015 until 21 October 2020.

[Redacted]

Signed: .....

Malcolm Rose

For and on behalf of the licensing authority

Date: 22 October 2015

SCHEDULE TO LICENCE NUMBER: 05568/15/0 DATED: 22 OCTOBER 2015

Part 1 - Particulars

1. Name and address of agent acting on behalf of licensee (if appropriate):

   As per licensee

2. Location of works:

   Forth Road Bridge, on a line located by joining the points

   55° 59.35' N 003° 24.21' W
   56° 00.72' N 003° 24.21' W

3. Description of works:

   Construction and Maintenance works at Forth Road Bridge

   As described in application dated 21 May 2015, and correspondence submitted in support of the application.

4. Nature and quantity of all deposits below Mean High Water Springs:

   All deposits on bridge over MHWS

SCHEDULE TO LICENCE NUMBER: 05568/15/0 DATED: 22 OCTOBER 2015

Part 2 - Conditions

1. The licensee shall notify the licensing authority of the date of commencement and the date of completion of all operations relating to the licence. Separate notifications are required at the times of commencement and completion.

2. The licensee shall ensure that any debris or waste materials arising during the course of the works are removed from the site of the works for disposal at an approved location above the tidal level of Mean High Water Springs.

3. The licensee shall, within 28 days of completion of the works or within 28 days of the date of expiry of the licence, whichever is the sooner, submit a written report to the licensing authority stating the nature and quantity of all substances and objects deposited below Mean High Water Springs under authority of the licence. Where appropriate, nil returns shall be provided.

4. The licensee shall notify Source Data Receipt, The Hydrographic Office, Admiralty Way, Taunton, Somerset, TA1 2DN (e-mail: sdr@ukho.gov.uk; tel.: 01823 337900) of both progress and on completion of the works supply a copy of the licence, and wherever possible, 'as built plans', in order that all necessary amendments to nautical publications are made.

5. The licensee shall issue a Notice to Mariners in advance of the proposed start date, clearly stating the nature and duration of these operations.

6. The licensee shall ensure that a copy of this licence is given to each contractor appointed to carry out part or all of the works in order that they are clear about the extent of 'the works' for which consent has been given and the conditions that are attached to the consent.

7. The licensee shall notify in writing, the Licensing Authority no later than 1 month prior to any works not already agreed in the method statement or Construction Noise Management Plan.

8. The licensee shall ensure that the relevent Noise registry "Close Out" form is completed upon completion of the works. The form can be obtained via the following web link: http://www.scotland.gov.uk/Topics/marine/Licensing/marine/guidance/noise-registry. Once completed please rename the file with your application reference number, or the first 5 digits of your licence number (e.g. 05168) and the date (e.g."05168_220814") and return the form to the email addresses below, including your name and application number in the body of the email:

   MS Licensing: MS.MarineLicensing@scotland.gsi.gov.uk
   JNCC: noise.monitoring@jncc.gov.uk

9. The licensee shall consult with the responsible local navigation authority and the Harbour Authority/Commissioners where appropriate, who may wish to issue local warnings to alert those navigating in the vicinity to the presence of the works during the construction.

10. The licensee shall ensure appropriate steps are taken to minimise damage to the shoreline by the works.

11. The licensee shall ensure the shoreline is returned to the original profile, or as close as reasonably practicable, following the completion of the works.

12. The licensee shall ensure suitable bunding and storage facilities are employed to prevent the release of fuel oils, lubricating fluids associated with the plant and equipment into the marine environment.

13. The licensee shall ensure that the works are marked and/or lighted as required by the Northern Lighthouse Board and the marking to be continued unless and until the licensing authority rescind this direction.

14. If it is desired to display any marks or lights not required by this licence then details shall be submitted to the Northern Lighthouse Board and their ruling complied with. The display of unauthorised marks or lights is prohibited.

15. Any jack up barges and vessels utilised during the works when jacked up, shall exhibit signals in accordance with the UK Standard Marking Schedule for Offshore Installations.

16. The licensee shall ensure that the works are maintained at all times in good repair.

17. The licensee shall ensure a 'soft-start' approach is adopted for all noisy activities resulting in an increase of ≥3db in the ambient noise level at Long Craig Island.

18. The licensee shall ensure that no deviation from the schedule specified in the licence is made without the further written consent of the licensing authority.

19. The licensee shall ensure that no radio beacon or radar beacon operating in the marine frequency bands is installed or used on the works without the prior written approval of the licensing authority.

20. If in the opinion of the licensing authority the assistance of a Government Department, including the broadcast of navigational warnings, is required to deal with any emergency arising from:

    a) The failure to mark and light the works as required by licence.
    b) The maintenance of the works.
    c) The drifting or wreck of the works.

    The licensee shall be liable for any expenses incurred in securing such assistance.

21. In the event of the licensed operations being discontinued the works shall be removed and the site cleared to the satisfaction of the licensing authority.

22. The licensee shall remove the works from below the level of Mean High Water Springs, or such alterations made, within one month of notice being given by the licensing authority at any time it is considered necessary or advisable for the safety of navigation, and not replaced without further consent by the licensing authority. The licensee shall be liable for any expense incurred.

23. Any person authorised by the licensing authority shall be permitted to inspect the works at any reasonable time.

24. The licensee shall ensure that copies of the licence are available for inspection by any authorised Enforcement Officer at:

    a) the premises of the licensee;
    b) the premises of any agent acting on behalf of the licensee; and
    c) the site of the works.

25. In the event of the licensee becoming aware that any of the information on which the issue of the licence was based has changed, the licensing authority shall be immediately notified of the details.

26. The licensee shall at no time reduce the published height of the bridge or obstruct without first gaining permission from Forth Ports.

27. The licensee shall ensure that no debris and sparks will fall from the bridge while crafts/vessels are passing under the bridge.

28. The licensee shall ensure that the works do not interfere or obstruct the navigation lights on the bridge.

29. The licensee shall ensure noise does not exceed a maximum of 75db for works taking place within 400m of Long Craig Island between 1 May to 15 August (inclusive).

30. The licensee shall, no later than 1 month prior to commencement of the works, submit a Construction Noise Management Plan (CNMP) for the written approval of the Licensing Authority in consultation with SNH and any other consultee at the discretion of the Licensing Authority. This should include, but not be limited to:

    a) specific monitoring and measures required to be undertaken by the Licensee within 400m of Long Craig Island between 1 May to 15 August (inclusive);
    b) bi-monthly submission of noise reports during 1 May to 15 August (inclusive) the Licensee shall notify the Licensing Authority of noise levels generated during the Works within 400m of Long Craig Island. The noise reports shall include daily records, work start/stop records, delays and a summary of noise monitoring undertaken;
    c) written obligation to cease works where noise levels exceeds the maximum limit of 75db within 400m of Long Craig Island between 1 May to 15 August (inclusive). Works shall not continue until effective mitigation is put in place, and noise monitoring equipment is working.

The Licensee shall implement the approved Construction Noise Management Plan in full, unless otherwise agreed in writing by the Licensing Authority.

NOTES

1. You are deemed to have satisfied yourself that there are no barriers, legal or otherwise, to the carrying out of the licensed operations. The issue of the licence does not absolve the licensee from obtaining such authorisations, consents etc which may be required under any other legislation.

2. In the event that the licensee wishes any of the particulars set down in the Schedule to be altered, the licensing authority shall be immediately notified of the alterations. It should be noted that changes can invalidate a licence, and that an application for a new licence may be necessary.

3. Under Section 30 of the Marine (Scotland) Act 2010, the licensing authority may vary, suspend or revoke the licence, if it appears to the authority that there has been a breach of any of the provisions of the licence or for any other reason that appears to be relevant to the authority.

4. Under Section 39 of the Marine (Scotland) Act 2010, it is an offence to carry on a licensable marine activity or cause or permit any other person to carry on such an activity without a marine licence or fails to comply with any condition of a marine licence. It is a defence for a person charged with an offence under Section 40 in relation to any activity to prove that the activity was carried out for the purpose of saving life, or for the purposes of securing the safety of a vessel, aircraft or marine structure ('*force majeure*'), and that the person took steps within a reasonable time to provide full details of the incident to the licensing authority. (Under Annex II, Article 7 of the Convention for the Protection of the Marine Environment of the North-east Atlantic, the licensing authority is obliged to immediately report '*force majeure*' incidents to the Convention Commission).

5. <u>All correspondence or communications relating to the licence should be addressed to</u>:

Licensing Operations Team
Marine Scotland
Marine Laboratory
375 Victoria Road
Aberdeen
AB11 9DB

Tel: (01224) 295579
Fax: (01224) 295524

Appendix C: RSPB Roseate Tern LIFE Project - Summary Report May-June 2019

Where the wild stuff is...

Firth of Forth Tern Warden
RSPB Roseate Tern LIFE Project
SUMMARY REPORT May-June 2019

Long Craig Island

14th May
Long Craig Island from the shore
Mid afternoon, rising-high tide
Beaufort scale 2, Sunny

An estimated 60+ terns were observed on and around Long Craig and North Queensferry Harbour. These birds were mostly in the air, and were presumed to be prospecting. All terns that could be identified were common terns.

22nd May
Long Craig Island from the shore
Mid morning, low tide
Beaufort scale 3, Sunny, warm, but cloudy

There were no terns on or near Long Craig during this visit. 2 eider and 1 oystercatcher were on nests at the centre of the island.
Work was still being carried out on the bridge (an extension to the usual period of work had apparently been granted by SNH, Marine Scotland etc.), but it is not directly above the island, (slightly toward the North shore) and I did not hear any noise from them.
However, at a different time on the same day there were reports of "a few terns floating around mid-channel but nothing on the island or jetty in the harbour… There were workers banging and sawing at the top of the north shore tower".

North Queensferry Harbour: There were no terns on the jetty, but two common terns were in flight near the harbour.

30th May
Long Craig Island from the shore
Mid afternoon, falling mid-tide
Beaufort scale 3, Overcast, warm

At least 45 common terns appeared to be nesting on the island, with a further 23 possibly nesting. The colony was not fully settled, with quite a lot of movement and display/courtship behaviours stilloccurring.

Both eider and oystercatcher nests were still occupied.

5th June
Long Craig Island from the bridge above
Mid afternoon, rising-mid tide
Beaufort scale 3, warm and overcast

81 nests were recorded as occupied and active on the island, including several right down to the gabion cages and over 15 along the strand line.
Although 4 pairs of eider duck were resting at the western end of the island, the eider and oystercatcher nests in the centre of the island were abandoned.
12 herring gulls and 2 common terns were on the far-eastern end of Long Craig with another and 38 herring gulls and few black-headed gulls in the shallow water nearby.
At no point was any sign of predation observed, and the terns appeared to be unconcerned by their proximity.

Figure 1. Common terns at eastern end of strand line create more complex nests than those near the centre.

Figure 2. Showing almost all of nesting area, with visible strand line to the left (South).

North Queensferry Harbour: 16 common terns on the jetty, 2 of which were nesting.

10th June
Long Craig Island from the bridge
Midday, low tide
Beaufort scale 3, Sunny and clear, warm.

A minimum of 107 AONs were recorded. The additional nests are mostly at the edges of the colony, in all directions.

North Queensferry Harbour: 10 common terns on the jetty, 3 nesting on the northern end and 3 nesting on the southern end.

14th June
Long Craig Island from the bridge
Evening, rising mid-tide
Beaufort scale 2, Sunny, clear.

A small increase in the number of nests was recorded, with two additional nests at the low area to the eastern end of the nesting area. 109 AONs in total.
Although stormy weather had occurred in the last 48 hours, the nests at the edge of the colony were still active, and the strand line was undisturbed. The tides were highest at about 5.2m during this time, while extreme high tides are just over 6m.

North Queensferry Harbour: No common terns were observed on the jetty, but a single crow was at the southern end pecking at something, potentially feeding.

17th June
Long Craig Island from the shore
Midday, rising mid-tide
Beaufort scale 6, warm

A full nest count was not possible on this visit, but nests at the eastern and northern edges of the nesting area were still occupied, confirming that none had been washed out. There was also no evidence of disturbance or predation, and the colony appeared to be stable.

Figure 3. Extent of nesting area as viewed from North shore. Gabion cages visible to left.

North Queensferry Harbour: No common terns were observed on the jetty.

20th June
Long Craig Island from the bridge
Mid afternoon, low/mid-tide
Beaufort scale 3, Sunny with 50% cloud.

A minimum of 126 AONS were observed. Again, the increase in nests was at the periphery of the island, particularly to the East and South. There were no signs of disturbance or predation, and the strand line was not changed.

North Queensferry Harbour: A single common terns was observed on the jetty, but not nesting.

Figure 4. Common terns nesting from strand line down to gabion cages (near top of picture).

25th June
Long Craig Island from the shore and harbour.
Midday, mid-tide
Beaufort scale 4, Overcast.

A single nest that had been observed on the 20th June, along with 2 other possible nests were no longer visible. All 3 were located together, well below the high tide line on the southern side of the nesting area. Apart from the that the colony was unchanged, with young chicks visible in several nests.

North Queensferry Harbour: Two common terns were observed perched on the upright supports of the jetty, but none on the flat area.

27th June
Long Craig Island from the bridge
Early afternoon, falling mid/high-tide
Beaufort scale 3, Warm, sunny.

A minimum count of 128 confirmed AONs was recorded. All nests at the periphery of the nesting area were still intact, and occupied.
There was no visible evidence of disturbance or predation observed.
An additional 99 common terns were loafing at the eastern end of the exposed island beyond the gabion cages.

North Queensferry Harbour: A single common tern was observed at each end of the jetty, neither was nesting.

Appendix D: ECoW Field Notes

Project: FRB (Expansion joint replacement - North
Underdeck refurbishment - South)
Tern Disturbance
Activity: ECoW and Noise Monitoring

Date: Fri 26/07/2019
Personnel: Jamie Connelly & Jennifer Reid
Start time: 12:10 End time: 14:30 60% cc
Weather: Sunny, warm (22°C - 25°C), light breeze, dry ^ (20 gusts)
Equipment: Noise monitor & Opticron Savanna & 33 binos
12:09 - watches and clocks synchronised. & Opticron Imagic TGA WP 10x42 binos.

Time	Observation / Comments
12:10	Common terns appear unperturbed by any background noise. There is a constant hum from motor vehicles on Queensferry Crossing, particularly crossing different sections of the bridge. Occasional large vehicles crossing FRB are the loudest noise.
	Common terns observed taking fish back to nests.
	Cormorant/shag observed on eastern most island. Group of ducks on water, west of the island.
12:32-12:33	Tour boat passed just south of the island
12:37	A greater number of birds took to the air and made more calls - perhaps squabbling amongst themselves or because of another gull sp. flying overhead.
12:40 -	Rasping, drilling noise heard from FRB almost immediately above the noise monitor. A couple of short blasts only. No visible effect on tern colony.
~~12:42~~	~~Another~~ several more no. ^ bursts of drilling.

Time	Observation / Comments
cont'd...	Adult terns still bringing food to nests.
12:49	Tool dropped on working platform on FRB. No reaction from terns.
13:09	Wood pigeons made the trees rustle about 10m from the noise monitor
13:12	Train passed on Forth Rail Bridge - noise heard at site.
13:19	Two common terns flew past only ~30m away, heading upriver, and calling loudly.
~13:28 - 13:32	Frank Tipping (ABL) came to speak to us. He spoke with Chris Knowles (Wildstuff) the other day. Chris was explaining that unusual noises can be more disturbing to terns than loud familiar noises.
13:32	Large number of terns took flight - probably spooked by another bird, although did not witness as speaking to Frank.
13:52 - 18:55	Large numbers of the colony spooked and distress calls heard.
13:55 -	Stronger gusts of wind.
14:00	FRB seems to be quiet. No site personnel seen.
↖ 13:25	4 no. Shags / Cormorants seen on the island. Two were stretching out wings. (Photo taken.)
14:10	Siren heard, probably on southern side of the Forth. No effect on [redacted] tern colony.
14:12	Two large gulls flew overhead and one of the terns swooped towards one and let out distresses calls.
14:15	Black-headed gull landed near the shore. Jamie went to speak to Frank and he informed him that a subcontractor was on site.

FRB Tern Disturbance - ECoW

SITE NAME AND LOCATION	FRB - ECoW - Terns
DATE OF SURVEY 10:07 start 14:07	1/7/19
SURVEYORS NAME	Ryan Wood / Aileen Kelly
WEATHER CONDITIONS (temp, cloud cover, rain, wind)	overcast, Dry, tide out.

SURVEY FINDINGS	
Drilling - throughout Survey - No change in tern behaviour. - Foraging, flying nearby area of work. Hammering 10:27 - No change 10:36 - Very quiet work. - Foraging normal close to survey location ie close to work area & noisiest part. 10:40 - No work overhead - Normal behaviour. tide coming in Foraging reduced.	13:40 - Maintenance work commences - hand drill ↳ No effect on colony. 14:07 : Survey Complete ↳ No change in Colony behaviour.
15:36 - large ship passing by - terns undisturbed	

7/8/19 FRB - ECoW Notes

*See last page for wader info.

Site personnel: Jen Reid and Adam Kelly

Start: 09:03 End: 13:03

Weather: 100% c/c, light rain showers, fresh to strong breeze with strong gusts 17°C

High tide: 08:07 Low tide: 14:11

Time	Observations
09:00	Much less of Long Craig Island is exposed than last time.
09:15 - 10:25	Malcolm Fraser (SNH) on site.
09:38 - 09:39	Flock of terns took flight. Suspected to be due to gulls flying overhead... no increase in noise levels heard.
09:55 - 10:05	Wader on island [redacted]
10:32	Something caused some terns to temporarily dread. No increase in surrounding noise levels.
10:34	Gull flying nearby appeared to cause terns to dread. No increase in noise levels noted.
10:47	Flock of terns rose up from the island. Corresponded with fairly ~~loud~~ loud noise of vehicle crossing the FRB. More likely disturbance from predator.
11:01	Small flock left island momentarily. No external noise noted.
11:31	"
11:59	"
12:27 - 12:31	Spoke with ABI site agent. He informed me that the site personnel usually have an early lunch from 11.30am.
12:41	Flock of terns taking to the air. No loud noise(s) from the bridge.

13:01 | Approx. 150 terns counted. Larger number present now that tide is out.

* Spoke with ABI site agent before starting. He informed us there would be works on the bridge.
Expansion joint replacement works continuing on north side of bridge.
Underdeck refurbishment continuing on south side of bridge.

No noisey works carried out today. Only occasional faint metal on metal sounds heard. No drilling heard. No site personnel observed under bridge deck (at north side of bridge near monitoring location).

Photos of Long Craig Island from the monitoring location were taken at the start and end of the survey.