

AOWFL trusts that this is sufficient to proceed with the installation of the foundation substructures and for MS-LOT to partially discharge Condition 3.2.1.3.

Please do not hesitate to contact us if you have any further queries.

Regards,  
[Redacted]

---

**From:** [Redacted]  
**Sent:** Thursday, August 10, 2017 8:08 AM  
**To:** [Redacted]  
**Cc:** [Redacted]  
**Subject:** RE: Condition 3.2.1.3 of the Marine Licence\_Third Party Certification

Hi [Redacted]

As discussed in the meeting yesterday, MS LOT do require additional TPC for the suction bucket and suction bucket with turbine. [Redacted] will discuss with the EOWDC team and come back to MS LOT.

Kind regards,

[Redacted]

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**From:** [Redacted]  
**Sent:** 08 August 2017 16:17  
**To:** [Redacted]  
**Cc:** [Redacted]  
**Subject:** RE: Condition 3.2.1.3 of the Marine Licence\_Third Party Certification

[Redacted]

We would like to clarify that the TPC for the suction buckets, for the suction buckets when assembled with the turbine and these also insitu, will be covered by the "foundation detailed design".

Following on from my email below the statements of conformity for the design basis for the foundation design, the loads and for the foundation detailed design are expected to be available in October 2017. These would be then submitted to MS-LOT.

Could you please confirm that this information is sufficient to satisfy the requirements of Marine Licence Condition 3.2.1.3?

Thanks,  
[Redacted]

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**From:** [Redacted]  
**Sent:** Monday, August 07, 2017 3:04 PM  
**To:** [Redacted]  
**Cc:** [Redacted]  
**Subject:** RE: Condition 3.2.1.3 of the Marine Licence\_Third Party Certification

Good afternoon [Redacted]

Further to your email below, MS LOT do require the TPC (including a report) for the Suction buckets and for the suction buckets when assembled with the turbine and these also insitu.

Kind regards,

[Redacted]

---

**From:** [Redacted]  
**Sent:** 19 July 2017 09:09  
**To:** [Redacted]  
**Cc:** [Redacted]

**Subject:** RE: Condition 3.2.1.3 of the Marine Licence\_Third Party Certification

Dear [Redacted]

As stated on the letter submitted to MS-LOT on the 15<sup>th</sup> May, regarding the third party certification requirements, attached you can find the corresponding certificate for the MK1C model.

The statements of conformity for the design basis for the foundation design, the loads and for the foundation detailed design are not yet available and will be submitted to MS-LOT as soon as they become available. However, it is considered that the information provided is sufficient to satisfy the requirements of Marine Licence Condition 3.2.1.3.

Could MS-LOT please confirm that this is the case?

Thanks,  
[Redacted]

---

**From:** [Redacted]  
**Sent:** Monday, May 15, 2017 5:37 PM  
**To:** [Redacted]  
**Cc:** [Redacted]  
**Subject:** Condition 3.2.1.3 of the Marine Licence\_Third Party Certification

Dear [Redacted]

Condition 3.2.1.3 of the Marine Licence requires that Aberdeen Offshore Wind Farm Limited (AOWFL) provides the Licensing Authority with a covering certificate detailing Third Party Certification, or a suitable alternative as agreed in writing with the Licensing Authority, of the turbines and sub-structures, no later than three months prior to the Commencement of the Works, unless otherwise agreed in writing with the Licensing Authority.

It is considered that the enclosed information is sufficient to satisfy the requirements of Marine Licence Condition 3.2.1.3.

Please do not hesitate to contact me if you require any further information.

Regards,  
[Redacted]

[Redacted]  
[Redacted]  
Aberdeen Offshore Wind Farm

3<sup>rd</sup> Floor, The Tun Building  
4 Jackson's Entry  
Holyrood Road  
Edinburgh  
EH8 8PJ

[Redacted]

[Redacted]

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Dh'fhaodadh gum bi teachdaireachd sam bith bho Riaghaltas na h-Alba air a chlàradh neo air a sgrùdadh airson dearbhadh gu bheil an siostam ag obair gu h-èifeachdach neo airson adhbhar laghail eile. Dh'fhaodadh nach eil beachdan anns a' phost-d seo co-ionann ri beachdan Riaghaltas na h-Alba.

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**From:** [Redacted]  
**Sent:** 13 February 2018 17:05  
**To:** [Redacted]  
**Cc:** [Redacted]  
**Subject:** RE: EOWDC - Dropped Object - Clump Weight/Cardinal Buoy - MS-LOT Response

Hi [Redacted]

Many thanks for the update. We look forward to receiving the updated Dropped Objects form and NtMs. I hope the cardinal buoy can be redeployed imminently. Please keep us updated about any further developments.

Kind regards

[Redacted]

---

**From:** [Redacted]  
**Sent:** 13 February 2018 16:52  
**To:** [Redacted]  
**Cc:** [Redacted]  
**Subject:** RE: EOWDC - Dropped Object - Clump Weight/Cardinal Buoy - MS-LOT Response

Many thanks [Redacted] for the quick response and AOWFL greatly appreciates that MS has agreed with the suggested approach.

The dropped object form will be updated and issued today as well as the NtM. We will also make sure that the ECoW Report and the TAS include both clump weights and AOWFL will keep investigating the possibility of removing the lost clump weight, ahead of the final removal of the cardinal buoys and corresponding clump weights.

Regards,  
[Redacted]

**From:** [Redacted]  
**Sent:** Tuesday, February 13, 2018 4:21 PM  
**To:** [Redacted]

**Cc:** [Redacted]

**Subject:** EOWDC - Dropped Object - Clump Weight/Cardinal Buoy - MS-LOT Response

Dear [Redacted]

Many thanks for your prompt reply. MS-LOT have discussed this matter internally and advise that the cardinal buoy can be redeployed with a new clump weight and the existing clump weight left in situ, due to the navigational risks arising from the cardinal buoy being non-operational. However, please note that all five clump weights used for construction buoyage must be removed following final commissioning of the operational marking for the Development (as per the NSP & NMP for the project). Should an earlier opportunity to remove the clump weight arise, please arrange for its removal.

I would be grateful if you could please ensure that the TAS and ECoW Reports for this month include details of the 'lost' clump weight and the redeployment of the cardinal buoy with a new clump weight. Please also ensure that the Dropped Objects form is updated with the new plan of action and circulated to the contact list, to ensure all stakeholders are informed and NtMs issued etc.

If you have any queries please do not hesitate to contact me.

Best

[Redacted]

---

**From:** [Redacted]  
**Sent:** 13 February 2018 15:43  
**To:** [Redacted]  
**Cc:** [Redacted]  
**Subject:** RE: EOWDC - Dropped Object - Clump Weight/Cardinal-Buoy - Request for further information 2

I should have also mentioned that we have a draft NtM ready to be issued informing that the south cardinal buoy is not currently in place and the clump weight is on the seabed.

Regards,  
[Redacted]

**From:** [Redacted]  
**Sent:** Tuesday, February 13, 2018 3:41 PM  
**To:** [Redacted]

**Cc:** [Redacted]

**Subject:** RE: EOWDC - Dropped Object - Clump Weight/Cardinal Buoy - Request for further information 2

Dear [Redacted]

Apologies for the delay in coming back on this but I have been in meetings until now. AOWFL's highest priority is to ensure that the cardinal buoy is redeployed as soon as possible and considers that it will be a higher navigational risk to extend the time that the construction site is without one of the cardinal buoys than leaving the clump weight on site (next to the cardinal buoy) for a few months until the rest of the cardinal buoys are removed. This is due to the current vessel availability.

However, in addition to this, AOWFL is always try to minimise the number of people working offshore due to the risks associated with working offshore. Therefore from a safety point of view AOWFL proposes to reduce the number of vessels, and therefore crew on site, delaying the retrieve of the clump weight only for a few months.

Happy to organise a call with our Construction Manager to discuss this in further detail, if it is required, and I am available this afternoon if you would like to discuss this over the phone.

Thanks,  
[Redacted]

**From:** [Redacted]  
**Sent:** Tuesday, February 13, 2018 9:23 AM  
**To:** [Redacted]

Cc: [Redacted]

**Subject:** EOWDC - Dropped Object - Clump Weight/Cardinal Buoy - Request for further information 2

Dear [Redacted]

Many thanks for such a quick response.

During our phone conversation yesterday you indicated that the poor weather and resulting risk to personnel were part of the justification for not retrieving the clump weight, however this is not reflected in your e-mail below. Can you please confirm whether the main justification for not retrieving the clump weight is lack of vessel availability or due to the limited weather window for retrieval at the moment?

Best

[Redacted]

---

**From:** [Redacted]

**Sent:** 12 February 2018 22:43

**To:** [Redacted]

**Cc:** [Redacted]

**Subject:** RE: EOWDC - Dropped Object - Clump Weight/Cardinal Buoy - Request for further information

Dear [Redacted]

Thanks for coming back on this.

AOWFL is very willing to redeploy the cardinal buoy as soon as possible as a safety feature for the construction site. AOWFL has been able to secure a vessel to redeploy the cardinal buoy as soon as the cardinal is repaired, as it has suffered some damage. However, at this stage AOWFL has not been able to secure a vessel with a ROV onboard capable to retrieve the clump weight and it might be a few weeks before a vessel with these capabilities is available. If AOWFL has to retrieve the clump weight, before the cardinal buoy can be redeployed, this will cause a delayed and the construction site will be without this safety feature for a few weeks.

The other option that AOWFL is investigating is to retrieve the clump weight, as soon as a suitable vessel becomes available, once the cardinal buoy has been redeployed. However, as the location of the cardinal buoys has been agreed with the relevant stakeholders and therefore it will have to be redeployed in very close proximity to where the clump weight is believed to be, this operation could be challenging.

Please let us know if this is clear, MS has any queries or any further information is requested.

Thanks,  
[Redacted]

**From:** [Redacted]

**Sent:** Monday, February 12, 2018 3:19 PM

**To:** [Redacted]

Cc: [Redacted]

**Subject:** EOWDC - Dropped Object - Clump Weight/Cardinal Buoy - Request for further information

**Importance:** High

Dear [Redacted]

Many thanks for your time earlier today. During the telephone call you stated that your contractor has queried whether the existing clump weight for the cardinal buoy could remain in place and the cardinal buoy redeployed with a new clump weight at the same location under the auspices of the Marine Licence for the project, with both clump weights and the cardinal buoy being removed in 3-4 months (upon Completion of Works).

I would be grateful if you could please provide the rationale/justification for the proposal to leave the current clump weight in situ and redeploy the cardinal buoy with a new clump weight, leaving the current clump weight in place for the next 3-4 months (until Completion of Works).

If you have any queries please do not hesitate to contact me.

Kind regards

[Redacted]

[Redacted]

[Redacted]

**marinescotland**

Marine Scotland Licensing Operations Team

Scottish Government

Marine Laboratory, 375 Victoria Road, Aberdeen, AB11 9DB

[Redacted]

[Redacted] / [MS.MarineRenewables@gov.scot](mailto:MS.MarineRenewables@gov.scot)

<http://www.gov.scot/Topics/marine/Licensing/marine>

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Dh'fhaodadh gum bi teachdaireachd sam bith bho Riaghaltas na h-Alba air a chlàradh neo air a sgrùdadh airson dearbhadh gu bheil an siostam ag obair gu h-èifeachdach neo airson adhbhar laghail eile. Dh'fhaodadh nach eil beachdan anns a' phost-d seo co-ionann ri beachdan Riaghaltas na h-Alba.

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[Redacted]

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**From:** [Redacted]  
**Sent:** 15 February 2018 07:19  
**To:** [Redacted]  
**Subject:** RE: Aberdeen Offshore Wind Farm Ltd\_Dropped Objects Form\_South Cardinal Buoy

Hi [Redacted]

We are currently in the process of updating the dropped objects and we have removed this email, therefore please do remove this contact.

Kind regards,

[Redacted]

---

**From:** [Redacted]  
**Sent:** 14 February 2018 12:01  
**To:** [Redacted]  
**Subject:** FW: Aberdeen Offshore Wind Farm Ltd\_Dropped Objects Form\_South Cardinal Buoy

[Redacted]

Based on the email received below if MS agrees with this I will remove this email address ([offshore.inspectorate@decc.gsi.gov.uk](mailto:offshore.inspectorate@decc.gsi.gov.uk)) from the form and any further notifications regarding dropped objects.

Regards,  
[Redacted]

**From:** BST [<mailto:BST@beis.gov.uk>]  
**Sent:** Wednesday, February 14, 2018 10:25 AM  
**To:** [Redacted]  
**Subject:** RE: Aberdeen Offshore Wind Farm Ltd\_Dropped Objects Form\_South Cardinal Buoy

Good Morning [Redacted]

Can I please ask you take us off of your mailing list as this is not applicable for our department.

Many Thanks in advance  
[Redacted]



[Redacted]

[Redacted]

Offshore Petroleum Regulator for  
Environment and Decommissioning  
Department for Business, Energy and  
Industrial Strategy  
3rd Floor, AB1 Building (Wing C), Crimon  
Place, Aberdeen. AB10 1BJ

T: [Redacted]  
E: [Redacted]  
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**From:** [Redacted]  
**Sent:** 13 February 2018 22:43  
[Redacted]  
[Redacted] ; 'nffo@nffo.org.uk'; 'aberdeen.coastguard@mcga.gov.uk'; 'kingfisher@seafish.co.uk'  
**Cc:** [Redacted]

**Subject:** RE: Aberdeen Offshore Wind Farm Ltd\_Dropped Objects Form\_South Cardinal Buoy

Dear All,

Following on from my email below, in order to be able to redeploy the south cardinal buoy as soon as possible, and due to current vessel availability, the lost clump weight is proposed to be left in situ, while the cardinal buoy with the new clump weight is redeployed. However, it should be noted that all five clump weights, used for construction buoyage, will be removed following final commissioning of the construction marking for the Wind Farm.

Please do not hesitate to get in contact if you have any queries or require any further information.

Regards,  
[Redacted]

**From:** [Redacted]  
**Sent:** Monday, February 12, 2018 8:36 AM  
**To:** 'MS.MarineRenewables@gov.scot' <MS.MarineRenewables@gov.scot>; 'offshore.inspectorate@decc.gsi.gov.uk' <offshore.inspectorate@decc.gsi.gov.uk>; 'PON2@sff.co.uk' <PON2@sff.co.uk>;  
[Redacted]  
[Redacted]  
[Redacted] 'nffo@nffo.org.uk' <nffo@nffo.org.uk>; 'aberdeen.coastguard@mcga.gov.uk' <aberdeen.coastguard@mcga.gov.uk>; 'kingfisher@seafish.co.uk' <kingfisher@seafish.co.uk>  
**Cc:** [Redacted]

**Subject:** Aberdeen Offshore Wind Farm Ltd\_Dropped Objects Form\_South Cardinal Buoy

Dear All,

Aberdeen Offshore Wind Farm Limited notifies that the South Cardinal Buoy of the European Offshore Wind Deployment broke loose from its mooring on the 10<sup>th</sup> February and was recovered within a few hours. The cause of the incident is believed to be the failure of the chain or connection which held the clump weight to the mooring chain for the buoy. The clump weight is to be located and removed to allow for redeployment of South Cardinal Buoy as soon as possible .

We will let you know once the clump weight has been recovered and the south cardinal buoy redeployed.

In the meantime please do not hesitate to contact me if you have any queries or require any further information.

Regards,

[Redacted]  
[Redacted]  
Aberdeen Offshore Wind Farm

3<sup>rd</sup> Floor, The Tun Building  
4 Jackson's Entry  
Holyrood Road  
Edinburgh  
EH8 8PJ

[Redacted]  
[Redacted]

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**From:** [Redacted]  
**Sent:** 15 February 2018 07:06  
**To:** [Redacted]  
**Cc:** [Redacted]  
**Subject:** RE: Temporary Cable Protection

Hi [Redacted]

Thank you for the update.

[Redacted]

---

**From:** [Redacted]  
**Sent:** 14 February 2018 16:02  
**To:** [Redacted]  
**Cc:** [Redacted]

**Subject:** RE: Temporary Cable Protection

Hi [Redacted]

Just to confirm that the remaining 9 rock bags were installed on Monday as planned. This will be detailed in the WNoO, TAS and ECoW Report.

Regards,  
[Redacted]

**From:** [Redacted]  
**Sent:** Monday, February 12, 2018 10:44 AM  
**To:** [Redacted]  
**Cc:** [Redacted]

**Subject:** RE: Temporary Cable Protection

Hi [Redacted]

Many thanks.

[Redacted]

---

**From:** [Redacted]  
**Sent:** 12 February 2018 08:53  
**To:** [Redacted]  
**Cc:** [Redacted]

**Subject:** RE: Temporary Cable Protection

Good morning [Redacted]

Many thanks for coming back to us on this. We confirm that half of the bags were installed during the weekend and the remaining bags are proposed to be deployed today.

We can discuss this and any other queries that you might have during our weekly call today.

Regards,  
[Redacted]

From: [Redacted]  
Sent: Friday, February 09, 2018 1:35 PM  
To: [Redacted]  
Cc: [Redacted]

**Subject: RE: Temporary Cable Protection**

Good afternoon [Redacted]

Thank you for your email.

We have discussed your query and can confirm agreement with the proposal to temporarily deploy protection for currently exposed cables.

This is based on a number of factors including:

- 13750 m3 gravel, 22000 m3 stone and 44000 m3 of sand can be deposited under the Marine Licence 04309/18/0
- You have confirmed that this is a temporary deployment and that committed to removing this protection once the cable is buried
- You have received multi stage consent for the Cable Laying Strategy, which includes the Cable Protection Plan ("CPP"). The CPP addresses the possibility for cable
- protection
- You have confirmed; which MS-LOT are content with, that you will communicate this plan/these works to the stakeholders

Please keep MS-LOT updated with regard to the progress of this and when the rock is deployed/removed.

I hope this clarifies the situation, however; please do contact us if you have any queries.

Kind regards,  
[Redacted]  
[Redacted]

**Marine Scotland Licensing Operations Team**

Scottish Government  
Marine Laboratory  
375 Victoria Road  
Aberdeen  
AB11 9DB

**PLEASE NOTE NEW TELEPHONE NUMBER**

[Redacted]

[Redacted] / [MS.MarineRenewables@gov.scot](mailto:MS.MarineRenewables@gov.scot)

w: <http://www.gov.scot/marinescotland>

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**From:** [Redacted]  
**Sent:** 09 February 2018 12:59  
**To:** [Redacted]  
**Cc:** [Redacted]

**Subject:** Temporary Cable Protection

Dear [Redacted]

As briefly discussed over the phone, the Contractors are experiencing some difficulties laying the nearshore cable and, while they are investigating potential solutions for this, they are assessing the current forecasts and carrying out calculations on the stability of the cable in the most at risk areas.

The preliminary results are that with the predicted height waves of more of 4 m (Hs), the cable will not be stable in the shallow waters, as the cable is currently only surface laid on that section. To prepare for stabilisation the Contractors are proposing to deploy up to 19 rock filter units (4 tonnes). More information can be found here <http://pipeshield.com/products/precision-rock-placement-units>. It should be noted that these units will only be only deployed temporary and removed once the cable has been properly buried.

If these rock filter units were not deployed there is a high risk of damage to the cable. This could result in critical damage to the cable requiring extensive further remedial works or increasing the risk of critical failure over the lifetime of the Project.

Could Marine Scotland confirm if, in addition to issuing a NtM, any further actions would be required?

Please let me know if you have any queries or any further information is required.

Thanks,  
[Redacted]

[Redacted]  
[Redacted]  
Aberdeen Offshore Wind Farm

3<sup>rd</sup> Floor, The Tun Building  
4 Jackson's Entry  
Holyrood Road  
Edinburgh  
EH8 8PJ

[Redacted]  
[Redacted]

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Eclipse Energy Company Ltd, Kentish Flats Ltd, Ormonde Energy Ltd, Ormonde Energy Holdings Ltd, Ormonde Project Company Ltd, Thanet Offshore

[Redacted]

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**From:** [Redacted]  
[Redacted]  
**Sent:** 18 February 2018 21:47  
**To:** [Redacted]  
**Cc:** [Redacted]  
**Subject:** RE: EOWDC - Weekly Call Action Tracker - Monday 12 February 2018  
**Attachments:** EOWDC\_MS LOT Action Tracker for T\_Cs\_180218.xlsx

Hi [Redacted]

Attached you can find the updated action tracker. I will provide more detail tomorrow about the new points added. Please let me know if I have missed anything.

Regards,  
[Redacted]

**From:** [Redacted]  
**Sent:** Thursday, February 15, 2018 4:30 PM  
**To:** [Redacted]  
**Cc:** [Redacted]  
**Subject:** EOWDC - Weekly Call Action Tracker - Monday 12 February 2018

Hi [Redacted]

Can you please send me an updated version of the action tracker following our weekly call on Monday 12th February? Many thanks.

[Redacted]

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Dh'fhaodadh gum bi teachdaireachd sam bith bho Riaghaltas na h-Alba air a chlàradh neo air a sgrùdadh airson dearbhadh gu bheil an siostam ag obair gu h-èifeachdach neo airson adhbhar laghail eile. Dh'fhaodadh nach eil beachdan anns a' phost-d seo co-ionann ri beachdan Riaghaltas na h-Alba.

\*\*\*\*\*

[Redacted]

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**From:** [Redacted]  
**Sent:** 19 February 2018 17:40  
**To:** [Redacted]  
**Cc:** [Redacted]  
**Subject:** EOWDC - Noise Monitoring Report\_Cable Landfall Works - Acknowledgement of receipt

Thanks [Redacted] MS-LOT acknowledge receipt and we will discuss any queries with you on Wednesday.

Kind regards

[Redacted]

---

**From:** [Redacted]  
**Sent:** 19 February 2018 17:09  
**To:** [Redacted]  
**Cc:** [Redacted]  
**Subject:** Noise Monitoring Report\_Cable Landfall Works

Dear [Redacted]

Attached you can find the noise monitoring report commissioned by AOWFL in relation to the works at the cable landfall site. The report details the prevailing daytime and night-time noise levels during a seven day period of construction works. The measured noise levels are compared to the working schedule of the monitoring period to identify site specific noise levels and ambient noise climate at non-operational times.

As briefly discussed during the call today, the results indicate that there were some 1-hour exceedances of the night-time criteria levels in some instances during times of both activity and non-activity at the site.

We could discuss any queries or comments that you might have and actions to be taken during the call on Wednesday 21<sup>st</sup> or earlier if it is required.

Regards,  
[Redacted]

[Redacted]  
[Redacted]  
Aberdeen Offshore Wind Farm

3<sup>rd</sup> Floor, The Tun Building  
4 Jackson's Entry  
Holyrood Road  
Edinburgh  
EH8 8PJ

[Redacted]  
[Redacted]

---

We have recently changed the registered offices of a number of our companies. The following are now registered at 1 Tudor Street, London, EC4Y 0AH:



[Redacted]

---

**From:** [Redacted]  
[Redacted]  
**Sent:** 19 February 2018 17:09  
**To:** [Redacted]  
**Cc:** [Redacted]  
**Subject:** Noise Monitoring Report\_Cable Landfall Works.  
**Attachments:** 2963\_Aberdeen\_NoiseReport\_v3-0\_BA\_20180219.pdf

Dear [Redacted]

Attached you can find the noise monitoring report commissioned by AOWFL in relation to the works at the cable landfall site. The report details the prevailing daytime and night-time noise levels during a seven day period of construction works. The measured noise levels are compared to the working schedule of the monitoring period to identify site specific noise levels and ambient noise climate at non-operational times.

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4 Jackson's Entry  
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EH8 3PJ

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We have recently changed the registered offices of a number of our companies. The following are now registered at 1 Tudor Street, London, EC4Y 0AH:  
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Eclipse Energy Company Ltd, Kentish Flats Ltd, Ormonde Energy Ltd, Ormonde Energy Holdings Ltd, Ormonde Project Company Ltd, Thanet Offshore

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**ARCUS**

**ABERDEEN OFFSHORE WIND FARM  
CONSTRUCTION NOISE SURVEY REPORT**

**FEBRUARY 2018**



Prepared By:

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## 1 INTRODUCTION

Arcus Consultancy Services Ltd (Arcus) was commissioned by Aberdeen Offshore Wind Farm to undertake a construction noise survey in relation to works at the cable landfall site, located at Blackdog Aberdeen.

The report details the prevailing daytime and night-time noise levels during a 7 day period of construction works. The measured noise levels are compared to the working schedule of the monitoring period to identify site specific noise levels and ambient noise climate at non-operational times. This is used to assess against the specific construction noise criteria and limits to present the noise impact of the Development.

A glossary of terms is included in Section 7.

## 2 GUIDANCE

The following guidance and information sources are considered in the assessment:

- BS 5228-1: 2009 +A1:2014 Code of Practice for noise and vibration control on construction and open sites – Part 1: Noise;
- The Construction Noise Management Plan (ref: ABE-ENV-DC-0005.Rev.2); and
- The Noise Chapter of the ES for the onshore works.

### 2.1 BS 5228-1: 2009 +A1:2014 - Part 1

BS 5228-1:2009+A1:2014 was issued in 2014, and contains some minor amendments from the previous version of the standard issued in 2009. The standard:

- Refers to the need for the protection against noise and vibration of persons living and working in the vicinity of, and those working on, construction sites;
- Emphasises the importance of community relations in relation to the acceptability of construction noise;
- Makes recommendations regarding the supervision, planning, preparation and execution of works, emphasising the need to consider noise at every stage of the operation;
- Provides a method of calculating the levels of noise resulting from construction activities and source levels for various types of plant, equipment and construction activities;
- Recommends procedures for noise and vibration control in respect of construction operations; and
- Includes example criteria for the assessment of the significance of noise effects.

BS 5228-1 provides several example criteria for the assessment of the significance of noise effects from construction activities. The method described in Section E.3.2. (Example method 1 –“The ABC method”) has been referenced to as a basis in the clients Construction Noise Management Plan (CNMP) for evaluating noise thresholds and monitoring methodology (See Section 2.2)

This method requires knowledge of the pre-construction ambient noise levels, which were taken previously by a third party and are presented in Table 1 of this report (Section 3).

### 2.2 Construction Noise Management Plan (CNMP)

The CNMP, assumed approved by MS-LOT / Aberdeenshire Council Environmental Health, provides a table of thresholds of significance for construction noise (Table 3 of the CNMP), which is based on the ‘ABC Method’ described in BS 5228.

The table is reproduced overleaf for convenience:

**Table 3 Threshold of Significant Effect at Dwellings**

Assessment category and threshold value period ( $L_{Aeq}$ )	Threshold value, in decibels (dB)		
	Category A <sub>i</sub>	Category B <sub>ii</sub>	Category C <sub>iii</sub>
Night-time (23.00–07.00)	45	50	55
Evenings and weekends <sub>iv</sub>	55	60	65
Daytime (07.00–19.00) and Saturdays (07.00–13.00)	65	70	75

- i) Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.
- ii) Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as Category A values.
- iii) Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than Category A values.
- iv) 19.00–23.00 weekdays, 13.00–23.00 Saturdays and 07.00–23.00 Sundays.

The CNMP states that BS 5228 "...dictates that a significant effect is predicted if the total  $L_{Aeq}^1$  noise level, (existing plus construction) is calculated to exceed the threshold levels presented in Table 3 ... for the category appropriate to the ambient noise level<sup>2</sup>, for one month or more." And that "It is considered that a significant effect would occur if the increase in total noise levels is more than three decibels (dB) above the ambient noise, should this resultant level be above threshold values."

### 2.3 Noise Chapter of ES for Onshore Works

The noise chapter of the ES provides details of ambient  $L_{Aeq,T}$  noise levels measured prior to construction at two locations, the Eastern end of Hareburn Terrace and at Tarbothill Farm (ES Table 11.8). Only those for Hareburn Terrace are of relevance to this report.

Although the duration of these measurements (90 minutes in total at each location) is significantly shorter than the assessment periods defined in BS 5228 and the CNMP, they have been assumed to be representative of the relevant periods for the purposes of this report.

<sup>1</sup>  $L_{Aeq,T}$  is the equivalent continuous noise level, which is similar to an average over a given time period

<sup>2</sup> The ambient noise level excludes construction noise

### 3 ASSESSMENT CRITERIA

The ambient noise levels reported in the ES have been used to calculate the relevant noise limits at each location and for each period, described as follows and detailed in Table 1:

- The ambient noise level has been identified and rounded to the nearest 5 dB;
- This has been used to identify the relevant Category according to CNMP Table 3;
- The corresponding threshold values have been identified, also from CNMP Table 3;
- 3 dB has been added to the ambient noise levels and this value compared to the threshold values;
- The noise limit for total noise (ambient + construction noise) as per the CNMP is the higher of the threshold value and ambient noise + 3 dB. In all cases this is the threshold value; and
- A noise limit for site noise alone has been calculated by logarithmically subtracting the ambient noise level from the total noise limit and rounding the result to 1 dB.

**Table 1: Noise Limits**

Period	Ambient Noise Level $L_{Aeq,T}$ dB	Ambient Noise Level to 5 dB, $L_{Aeq,T}$	Category	Threshold, dB, $L_{Aeq,T}$	Total Noise Limit, dB, $L_{Aeq,T}$	Site Noise Limit, dB, $L_{Aeq,T}$
Evening and Weekend	53.1	55	B	60	60	59
Daytime	51.1	50	A	65	65	65
Night-time	43.6	45	B	50	50	49

The relevant assessment periods are defined in BS 5228 and the CNMP as follows:

**Evenings and Weekends:**

- 19:00 - 23:00 weekdays (T = 4 hours);
- 13:00 - 23:00 Saturdays (T = 10 hours); and
- 07:00 - 23:00 Sundays (T = 16 hours).

**Daytime:**

- 07:00 - 19:00 Mondays to Fridays (T = 12 hours); and
- 07:00 - 13:00 Saturdays (T = 6 hours).

**Night:**

- 23:00 – 07:00 on all days (T = 8 hours).

A literal interpretation of the limits would be that the overall  $L_{Aeq,T}$  level should be measured or calculated for the whole of the relevant assessment period and this compared with the relevant limits. However, as operations are likely to occur for up to 8 hours at a time, it is likely that these will occur for only part of one or more assessment periods on each occasion. Therefore a 7 day period was monitored to measure; day, evening, weekend and night time noise levels to determine average noise levels over the period as well as hourly  $L_{Aeq}$  for comparison against set limits.

The CNMP states that exceedances of the specified limits are only considered significant if they were to occur for a period of more than one month.

The noise levels are compared against the identified limits presented in Table 1 only in this assessment, where all instance of limit exceedance is identified.

## 4 METHODOLOGY

This assessment provides the necessary noise level data at the development to allow comparison of noise during construction with the chosen noise impact assessment criteria outlined in Section 3.

BS 5228 recommends assessment periods of night-time (23:00-07:00), daytime (Monday to Friday 07:00-19:00, Saturday (07:00-13:00) and Evenings and Weekends (the remaining time periods), Ambient noise measurements for such periods are most readily achieved by measuring over shorter periods (e.g. 1 hour) and logarithmically averaging.

All measurements were made using A-weighting and fast time-weighting in accordance with the relevant standards.

A full range of noise indices and statistics were measured, including the equivalent continuous noise level,  $L_{Aeq,1hr}$  (ambient noise).

### 4.1 Monitoring Locations

Monitoring was undertaken at the two nearest identified Noise Sensitive Receptors (NSRs). The monitoring locations are residences; Willow Grove to the north and Hareburn House to the south, shown in Figure 1 below along with identified sensitive receptors.

**Figure 1: Noise Monitoring Locations and Receptors**



### 4.2 Instrumentation

At each location, the equipment used consisted of an NL-52 Class 1 sound level meter, housed in an environmental enclosure with long-life batteries. The ½-inch condenser microphone was mounted on a 1.3 metre (m) pole, integral to the instrument case, and protected by an enhanced, weatherproof windshield.

All equipment was within the appropriate laboratory calibration interval and check-calibrated using a hand-held field calibrator at the start and end of the survey.

### 4.3 Weather

Weather data for the monitoring period was sourced from the wunderground.com website where the data from the nearest station was taken as representative weather for