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CIVIL NUCLEAR REACTOR PROGRAMME

NEW BUILD LICENSING

HINKLEY POINT C NUCLEAR SITE LICENSING

LICENCE CONDITION 16: SITE PLANS, DESIGNS AND SPECIFICATIONS

Assessment Report: ONR-CNRP-AR-12-122

Revision 1

07 January 2013

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ASSESSMENT REPORT

Site:	Hinkley Point C
Project:	NNB Generation Company Ltd's application for Nuclear Site licence to install and operate two EPR™ units at Hinkley Point C.
Title:	Licence Condition Compliance Arrangements Intervention.
Licence Number:	N/A (Pre-licence granting)
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ASSESSMENT REPORT

Document Acceptance (Revision 1)

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EXECUTIVE SUMMARY

Background and Scope.

NNB Generation Company Ltd (NNB GenCo) has formally applied to ONR for a nuclear site licence (NSL) to install and operate two EPR™ reactor units at Hinkley Point C in Somerset.

This report presents the findings of ONR's assessment which focused on development of arrangements for compliance with Licence Condition 16: Site plans, designs, and specifications; and the acceptability of the resulting plans and schedule.

Intervention Strategy

ONR has concluded a programme of intervention that has examined NNB GenCo's arrangements for complying with Licence Condition 16: Site plans, designs, and specifications. During the course of a programme of meetings ONR has engaged in dialogue which has informed improvements to the procedures for managing the preparation of, and subsequent changes to, the site plans and building schedule.

Conclusions of Intervention.

ONR's civil engineering assessor concluded that NNB GenCo has adequate procedures and documentation to meet the requirements of Licence Condition 16 for the purposes of granting a nuclear site licence.

I conclude that:

The drawings entitled "Hinkley Point C Site Licence Area" and "Hinkley Point C Development Site. HPC Permanent Development Site. Site Layout Plan" are acceptable for the purposes of granting a nuclear site licence.

The document entitled "List of Buildings" is acceptable for the purposes of granting a nuclear site licence.

The NNB GenCo procedure "Management of Site Plans, Designs and Specifications" satisfies the requirement to inform the Executive of changes having the potential to impact upon a building, plant or operation.

The procedure "Management of Interfaces with Regulators" facilitates ONR's use of the primary power requiring NNB GenCo to furnish to the Executive plans, designs or other information relating to buildings, plant or operations as the Executive may specify.

Recommendations.

I recommend that:

ONR should accept that NNB GenCo has fulfilled the requirements of Licence Conditions 16(1) and 16(2) by submitting to the Executive final published versions of:

- Hinkley Point C Nuclear Site Licence Area, drawing reference NNB-OSL-DRW-000001;
- Hinkley Point C Development Site. HPC Permanent Development Site. Site Layout Plan, drawing reference HPC-GEN047-U0-000-DRW-000001; and,
- List of Buildings, document reference NNB-OSL-LST-2012.

ONR should accept that NNB GenCo's proposed procedure "Management of Site Plans, Designs and Specifications" is adequate for the purpose of granting a nuclear site licence.

LIST OF ABBREVIATIONS

ALARP	<i>As low as is reasonably practicable</i>
BSL	<i>Basic Safety level (in SAPs)</i>
BSO	<i>Basic Safety Objective (in SAPs)</i>
BMS	<i>(ONR) How2 Business Management System</i>
EPR™	<i>Trade Mark of European pressurised water reactor</i>
HSE	<i>Health and Safety Executive (“the Executive”)</i>
IAEA	<i>International Atomic Energy Agency</i>
LC	<i>Licence Condition</i>
ONR	<i>Office for Nuclear Regulation (an agency of HSE)</i>
PCER	<i>Pre-construction Environment Report</i>
PCSR	<i>Pre-construction Safety Report</i>
PID	<i>Project Initiation Document</i>
PSA	<i>Probabilistic Safety Assessment</i>
PSR	<i>Preliminary Safety Report</i>
RGP	<i>Relevant Good Practice</i>
SAP	<i>Safety Assessment Principle(s) (HSE)</i>
SFAIRP	<i>So far as is reasonably practicable</i>
SSC	<i>System, Structure and Component</i>
TAG	<i>Technical Assessment Guide(s) (ONR)</i>
TSC	<i>Technical Support Contractor</i>
WENRA	<i>Western European Nuclear Regulators’ Association</i>

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NNB GenCo Compliance Arrangements

1 INTRODUCTION

1.1 Background

1 NNB Generation Company Ltd (NNB GenCo) has formally applied to ONR for a nuclear site licence (NSL) to install and operate two EPR™ reactor units at Hinkley Point C in Somerset (Ref 1).

2 This report presents the findings of ONR's assessment of NNB GenCo's arrangements for complying with Licence Condition (LC): 16 Site plans, designs, and specifications. The assessment was informed by a programme of meetings and intervention spanning the period October 2011 to July 2012. Assessment was undertaken in accordance with the requirements of the Office for Nuclear Regulation (ONR) How2 Business Management System (BMS) procedure AST/003 (Ref. 2).

1.2 Scope

3 The scope of this report covers the adequacy of NNB GenCo's arrangements for complying with LC16: Site plans, designs and specifications; for the purposes of supporting its application for a nuclear site licence.

1.3 Methodology

4 The methodology for the assessment follows ONR BMS document AST/003, Assessment Process (Ref. 2), in relation to mechanics of assessment within the Office for Nuclear Regulation (ONR).

5 This assessment focused upon NNB GenCo's procedures for producing and managing changes to relevant documentation and the acceptability of the documents produced to support its application for a nuclear site licence for Hinkley Point C.

2 ASSESSMENT STRATEGY

6 The assessment strategy for NNB GenCo's arrangements for complying with LC 16: Site plans, designs, designs and specifications; is set out in this section. This identifies the scope of the assessment and the standards and criteria that have been applied.

2.1 Standards and Criteria

7 This LC requires the licensee to produce and manage: drawings showing the nuclear licence area and layout of buildings on the site; and, a schedule identifying the operations conducted in each building. There are no nuclear industry specific standards or criteria relating to this LC.

8 Annex 3 to the document "Licensing Nuclear Installations" (Ref 6) provides guidance to licence applicants on preparation of the drawing defining the nuclear site licence area which is attached to the nuclear site licence.

2.2 Intervention Strategy

9 The assessment followed ONR's Intervention Strategy (Ref 3), and was informed by a programme of level 4 dialogue which aimed to examine:

- NNB compliance matrix and compliance thread for each condition sub clause;
- implementation of arrangements.

10 The intervention gave particular attention to:

- the procedure for managing site plans, designs and specifications;
- the arrangements for managing and informing the regulator of changes to relevant documents;
- the acceptability of the resulting plans, layouts and schedules produced to support its application for a nuclear site licence for Hinkley Point C

2.3 Integration with other licence Conditions

11 LC20 requires the licensee to make and implement arrangements for managing modifications to the design of a plant under construction which may affect safety. Such changes may also affect the site plan, layout and related schedule of buildings.

2.4 Out-of-scope Items

12 None identified.

3 LICENSEE'S SAFETY CASE

- 13 NNB GenCo's is not required to present a formal safety case for its arrangements for complying with conditions attached to the nuclear site licence.
- 14 Part 4 of the application (Ref 1) entitled Nuclear Site Licence Compliance Matrix: Hinkley Point C (Ref 4) identifies those procedures and documents within NNB GenCo's Integrated Management System (IMS) that achieve compliance with the licence conditions attached to the standard nuclear site licence. The Compliance Matrix identifies two groups of licence conditions.
- Group 1 – Licence Conditions required for activities that NNB GenCo expect to undertake during the construction and installation phases of the project. ONR expect the arrangements for these LC to be developed sufficiently to be fit for purpose at the time of NSL granting.
 - Group 2 – Licence Conditions required for activities that NNB GenCo will undertake during commissioning, operation and decommissioning phases of the project. NNB GenCo has provided a commitment to develop the necessary arrangements for complying with these LCs in the future.
- 15 LC 16: Site plans, designs and specifications; is designated Group 1 and therefore ONR expects NNB GenCo to have fit for purpose arrangements at the time of NSL grant.

4 ONR ASSESSMENT

4.1 Scope of Assessment Undertaken

16 The aim of the intervention that informed this assessment was to judge the adequacy of NNB GenCo's arrangements for producing and maintaining site plans, designs and specifications. The principal objective is to inform ONR's decision on whether to grant NNB GenCo a nuclear site licence. Thus ONR's intervention strategy (Ref 3) comprises the following elements.

- Development of arrangements. Examine NNB GenCo's Compliance matrix entry (procedures) and the underlying compliance thread (supporting arrangements, guidance etc.).
- Competence and Training. Examine the arrangements for developing training material and identifying the target roles and functions. Sample training packages and observe training.
- Implementation. Seek opportunities to inspect implementation of arrangements.
- Self Regulation. Discuss key findings and lessons learned from licensee's own self assessment of its arrangements.

17 This LC does not require the licensee to make and implement arrangements but is seeking management system procedures for the production and management of the relevant documentation. Therefore, ONR's intervention focused on development of arrangements and the acceptability of the resulting plans and schedule.

18 ONR's assessment was informed by dialogue with NNB GenCo during the course of the programme of L4 meetings listed at Table 1.

19 The intervention reported here is supplemented by a related intervention undertaken by ONR's civil engineering assessor and reported in the ONR report ONR-CNRP-AR-12088 (Ref 7). The assessor concluded that NNB GenCo has adequate procedures and documentation to meet the requirements of LC16 for the purposes of granting a nuclear site licence.

20 **ONR's civil engineering assessor concluded that NNB GenCo has adequate procedures and documentation to meet the requirements of LC16 for the purposes of granting a nuclear site licence.**

4.2 Assessment

4.2.1 Development of Arrangements – Compliance Matrix and Compliance Thread

21 The principal outputs from a licensee's arrangements for complying with LC16 are:

- a site plan showing the location of the boundary of the licensed site and every building or plant on the site which may affect safety; and,
- a schedule giving particulars of each building and plant on the site and the operations associated therewith.

The arrangements are to ensure if any changes are made on site which affect the buildings, plant or operations the licensee sends an amended site plan and schedule to the Executive. Table 2 lists the NNB GenCo procedures that comprise its arrangements for complying with LC16.

4.2.1.1 LC16(1).

- 22 NNB GenCo has elected to address the principal requirement of this sub-clause by preparing two drawings. The Compliance Matrix (Ref 4) includes the following entries.
- a. Hinkley Point C Nuclear Power Station Licence Site Area.
 - b. Hinkley Point C Development Site. HPC Permanent Development Site. Site Layout Plan.
- 23 NNB GenCo letter ONR-HPC-220295N dated 9 October 2012 (Ref 5) covers submission to the Executive of the above drawings as required for compliance with Licence Condition LC16(1).
- 24 Drawing a. describes the location of the boundary of the licensed site area and is the drawing that NNB GenCo intends ONR to attach to the Hinkley Point C Nuclear Site Licence. ONR has assessed this drawing against Annex 3 to “Licensing Nuclear Installations” (Ref 6) and is satisfied that it accords with the ONR guidance.
- 25 **ONR concludes that the drawing “Hinkley Point C Nuclear Site Licence Area” provides an acceptable representation of the Hinkley Point C nuclear site licence boundary and is suitable for attaching to the nuclear site licence.**
- 26 Drawing b. shows the location of each building and plant on the nuclear licensed site. The drawing includes a table listing the names and building reference codes for each building or plant.
- 27 **ONR concludes that the drawings entitled “Hinkley Point C Development Site. HPC Permanent Development Site. Site Layout Plan.” and “Hinkley Point C Site Layout” are acceptable for the purposes of granting a nuclear site licence.**
- 28 The compliance matrix entry for LC16(1) also cites the NNB GenCo procedure “Management of Site Plans, Designs and Specifications”. This procedure generates a Computer Aided Design (CAD) file containing the information required to define the location of the boundary to the nuclear licence site area. This file is archived as a permanent record under NNB GenCo arrangements for complying with LC6 and will be used to inform the arrangements for marking the site boundary as called for by LC2(4). ONR will examine this data file as part of the walk down of the nuclear site licence boundary to be completed prior to granting a licence.

4.2.1.2 LC16(2)

- 29 The Compliance Matrix entry for LC16(2) cites the “List of Buildings” as providing the schedule giving the particulars of each building shown on the drawing entitled Hinkley Point C Site Layout.
- 30 NNB GenCo letter ONR-HPC-220295N dated 9 October 2012 (Ref 5) covers submission to the Executive of this schedule as required for compliance with Licence Condition LC16(2).
- 31 The schedule lists for each building or plant:
- the building code, obtained from the table on the site layout;
 - the name;
 - a description of its functionality.

A column entitled “Building Specification Ref.” remains blank pending preparation of the building specification but will be populated as the information becomes available. The list

provides the information required to satisfy the requirement of this sub-clause to the licence condition.

32 The compliance matrix entry for LC16(2) also cites the NNB GenCo procedure “Management of Site Plans, Designs and Specifications”, which defines the arrangements for managing the “List of Buildings” through pre-construction, construction and operation.

33 **ONR concludes that the document entitled “List of Buildings” is acceptable for the purposes of granting a nuclear site licence.**

4.2.1.3 LC16(3).

34 This sub-clause requires the licensee to inform the Executive of any changes on the site which affect buildings, plant or operations. The compliance matrix refers to the NNB GenCo procedure “Management of Site Plans, Designs and Specifications” which defines the process by which the drawings and schedules submitted to ONR are managed, controlled, modified and communicated. The procedure concludes with the requirement to submit the modified layout and list to ONR.

35 Currently NNB GenCo owns the drawing of the nuclear site licence area and the list of buildings. NNB GenCo’s Architect Engineer (AE) currently owns the drawing of the site layout but ownership will transfer to NNB GenCo prior to start of nuclear safety related construction. Recognising that the AE may wish to modify a building, plant or operation prior to the transfer of ownership, NNB GenCo and its AE have signed an interface agreement requiring the AE submit to NNB GenCo any change proposals having the potential to impact upon the site layout or list of buildings for processing via the LC16 procedure.

36 Modifications to a building, plant or operation occurring during construction or installation will be initiated by NNB GenCo’s arrangements for compliance with LC20: Modification to a design under construction; and any consequent changes to the site layout or list of buildings managed by the LC16 procedure.

37 **ONR concludes that the NNB GenCo procedure “Management of Site Plans, Designs and Specifications” satisfies the requirement to inform the Executive of changes having the potential to impact upon a building, plant or operation.**

4.2.1.4 LC16(4).

38 This sub-clause gives the Executive the primary power to specify that the licensee furnish it with plans, specifications or other information relating to a building, plant or operation. The compliance matrix refers to the relevant NNB GenCo procedure for responding to ONR’s use of this primary power.

39 **ONR concludes that the procedure “Management of Interfaces with Regulators” facilitates ONR’s use of the primary power requiring NNB GenCo to furnish to the Executive plans, designs or other information relating to buildings, plant or operations as the Executive may specify.**

5 CONCLUSIONS AND RECOMMENDATIONS

40 ONR has concluded a programme of intervention that has examined NNB GenCo's arrangements for complying with Licence Condition 16: Site plans, designs and specifications. During the course of a programme of meetings ONR has engaged in dialogue which has informed improvements to the procedures that NNB GenCo has used to prepare drawings and schedules for submission to the Executive and which will also be used to manage future changes to these documents. The intervention has informed ONR's judgement on the adequacy of NNB GenCo's procedures and lead to the following conclusions and recommendations.

5.1 Conclusions

41 ONR's civil engineering assessor concluded that NNB GenCo has adequate procedures and documentation to meet the requirements of Licence Condition 16 for the purposes of granting a nuclear site licence.

42 The drawings entitled "Hinkley Point C Site Licence Area" and "Hinkley Point C Development Site. HPC Permanent Development Site. Site Layout Plan" are acceptable for the purposes of granting a nuclear site licence.

43 The document entitled "List of Buildings" is acceptable for the purposes of granting a nuclear site licence.

44 The NNB GenCo procedure "Management of Site Plans, Designs and Specifications" satisfies the requirement to inform the Executive of changes having the potential to impact upon a building, plant or operation.

45 The procedure Management of Interfaces with Regulators facilitates ONR's use of the primary power requiring NNB GenCo to furnish to the Executive plans, designs or other information relating to buildings, plant or operations as the Executive may specify.

5.2 Recommendations

46 This intervention makes the following recommendations.

47 ONR may accept that NNB GenCo has fulfilled the requirements of Licence Conditions 16(1) and 16(2) by submitting to the Executive final published versions of:

- Hinkley Point C Nuclear Site Licence Area, drawing reference NNB-OSL-DRW-000001;
- Hinkley Point C Development Site. HPC Permanent Development Site. Site Layout Plan, drawing reference HPC-GEN047-U0-000-DRW-000001; and,
- List of Buildings, document reference NNB-OSL-LST-2012.

48 ONR may accept that NNB GenCo's proposed procedure Management of Site Plans, Designs and Specifications are adequate for the purpose of granting a nuclear site licence.

6 REFERENCES

- 1 NNB GenCo letter ONR-OSL-RIO-000061 dated 29 July 2012. Application for Nuclear Site Licence for Hinkley Point. TRIM 2011/442090
- 2 *ONR How2 Permissioning Reports*. AST/003 Issue 4. HSE. August 2011.
www.hse.gov.uk/nuclear/operational/assessment/index.htm.
- 3 CNRP New Civil Reactor Build. NNB GenCo Ltd's Application for a Nuclear Site Licence to Install and Operate Two EPRTM Reactor Units at Hinkley Point. ONR Intervention Strategy. TRIM 2012/61973.
- 4 NNB GenCo Company Document Nuclear Site Licence Compliance Matrix: Hinkley Point C. NNB-OSL-PRO-000046, (Part 4 to Ref1).
- 5 NNB GenCo letter ONR-HPC-20295N dated 9 October 2012. Licence Condition 16(1) and 16(2) Compliance Submission. TRIM 2012/397365
- 6 ONR: Licensing Nuclear Installations. June 2012.
<http://vbtlwb16/webdrawer/rec/4053990/view/licensingNuclearInstallations-june2012.PDF>
- 7 ONR Assessment Report Civil Engineering workstream - nuclear site licensing of Hinkley Point C. ONR-CNRP-AR-12-088. TRIM 2012/321891.

Table 1

**Level 4 Meetings and Interventions to Discuss LC16:
Site plans, designs and specifications**

Date	Location	Topic	CR/IR No.	TRIM Ref.
Post-NSL Application				
20/10/11	HPC	Workstream 05 Level 4 LC2, 16 and Security Update	IR11200	2011/611440
26/01/12	HPC	NNB LC16 compliance for ONR NSL intervention purposes.	IR12252	2012/205293
16/04/12	HPC	NNB LC16 compliance for ONR NSL intervention purposes.	IR12073	2012/222624
18/07/12	HPC	LC16 – Site Plans, designs and specifications - HPC NSL Application intervention closure meeting.	IR12174	2012/343249

Table 2 Licence Condition 16: Site plans, designs and specifications NNB GenCo Compliance Arrangements		
LC Clause	NNB GenCo Procedure	Document Reference
LC16(1)	Hinkley Point C Nuclear Power Station licence Site Area	NNB-OSL-DRW-000001
	Hinkley Point C Development Site HPC Permanent Development Site. Site Layout Plan	HPC-GEN047-U0-000- DRW-000001
	Management of Site Plans, Designs and Specifications	NNB-OSL-PRO-000016
LC16(2)	List of Buildings	NNB-OSL-LST-000010
	Management of Site Plans, Designs and Specifications	NNB-OSL-PRO-000016
LC16(3)	Management of Site Plans, Designs and Specifications	NNB-OSL-PRO-000016
LC16(4)	Management of Interfaces with Regulators	NNB-OSL-PRO-000061