

North Sea Energy

Legal assessment of the development of a sand-based offshore energy island

Appendix K Report

As part of Topsector Energy:
TKI Offshore Wind & TKI New Gas

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1 Introduction

This report provides a more in-depth review of the findings of the legal assessment of a sand-based energy island under Dutch jurisdiction, which complements research from Work Packages 2.2 and 2.3 on offshore Power-to-Gas. Other studies in the North Sea Energy program have covered the integration of offshore wind energy with the production of hydrogen and transmission of electricity, albeit on existing hydrocarbon platforms and not an energy island.¹ Another study examined the construction of an artificial, sand-based elevation in the North Sea for the purposes of electricity transmission. This report is therefore the first regulatory assessment of the construction of an energy island in the North Sea, for the purposes of hydrogen production and electricity transmission.² In this report both international and national legal regimes are covered, both of which regulate offshore activities within the jurisdiction of the Netherlands.

Section 2 first provides an overview of the rights and responsibilities of coastal States under international law. In this section, a brief overview of the law of the sea is provided, with particular regard to the rights of States in conducting and authorising activities offshore, including the production of energy and the construction of installations and artificial islands, which should include a sand-based energy island within its scope. Furthermore, an overview of the responsibilities of States is given, particularly concerning the production of energy offshore as well as the responsibilities for States when seeking to construct or authorise the construction of installations and artificial islands.

In Section 3 an analysis of the regulation of offshore structures is provided, with regard to providing an understanding of how an energy island would be defined legally. First an overview of the terms defined under international law is assessed, including the definitions of 'island' and 'installations, structures and artificial islands'. This is conducted as an attempt to distinguish them and to understand how an energy island might be defined thereunder.

Section 4 provides an overview of the current regulation of offshore activities under Dutch law, which would affect the construction of an energy island within the Dutch part of the North Sea. A brief overview of Dutch maritime spatial planning is provided, before assessing the various licences and permits which are applicable to an energy island. These include an excavation permit and Wind energy permit, as well as a water permit.

¹ Drankier and Roggenkamp, *North Sea Energy II Regulatory Framework: Barriers or Drivers for Offshore System Integration*: Deliverable B.1, (2019), < https://www.north-sea-energy.eu/documents/NSE2_Deliverable%20B1_draft.pdf > accessed 30 January 2020; Andreasson and Roggenkamp, *Regulatory Framework: Legal Challenges and Incentives for Developing Hydrogen Offshore*, North Sea Energy 3, (2020)

² De Brauwe Blackstone Westbrook, *North Sea Wind Power Hub, Planning and Permitting Study in the Netherlands*, 2019, < https://northseawindpowerhub.eu/wp-content/uploads/2019/07/Planning_Permitting_Study_The-Netherlands_final.pdf > accessed 21 January 2020.

An analysis of these licences and the procedures by which they may be obtained is given, including an assessment of the potential legal obstacles which might impede a proposed development of an energy island. Furthermore, an overview of the future development of the regulation of offshore activities under Dutch law is given, with particular regard to the forthcoming amendments to Dutch maritime spatial planning policy.

2 Rights and Responsibilities under International Law

Each State is subject to the international regulation of maritime areas when seeking to make use of the sea. In international law the main sources in this context are the United Nations Convention on the Law of the Sea (UNCLOS),³ the 1958 Geneva Convention on the Continental Shelf (CS Convention)⁴ and The Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR).⁵

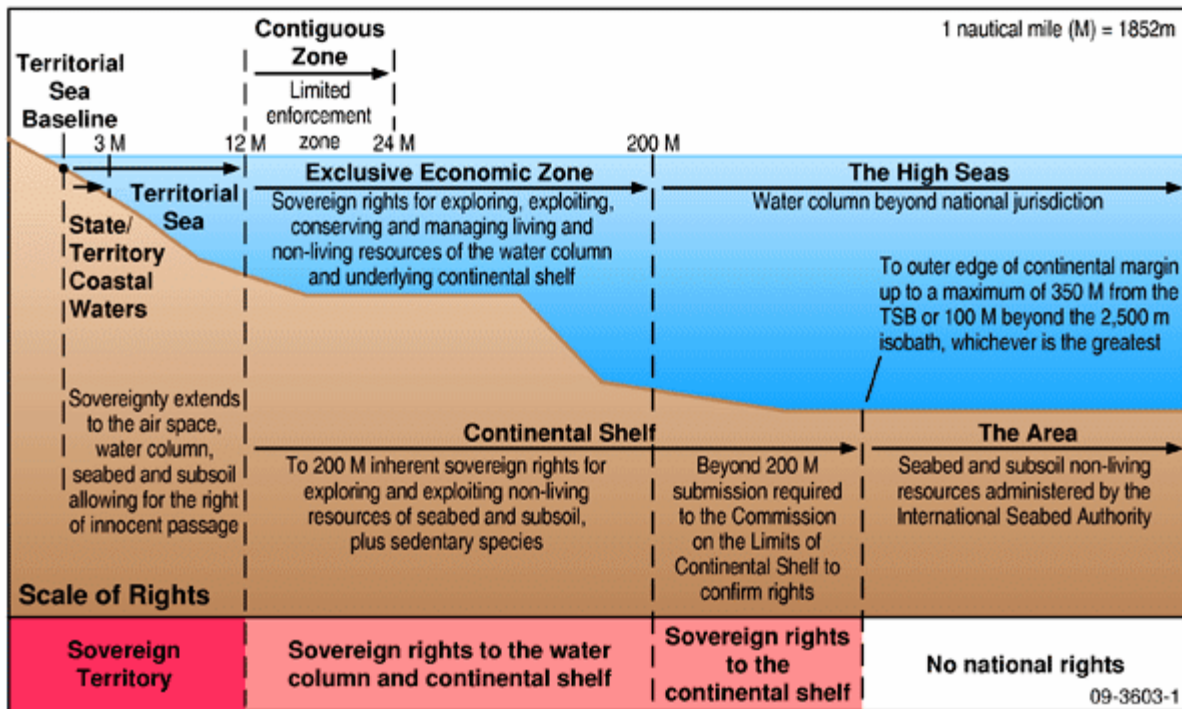


Figure 1: International maritime zones (image by National Oceanic and Atmospheric Administration)

The primary instrument which regulates the law of the sea is UNCLOS which divides the sea into four maritime zones: (i) the territorial sea, (ii) the Exclusive Economic Zone (EEZ), (iii) the continental shelf (CS) and (iv) the high seas. Two of these zones, the EEZ and CS are of particular importance to this report. The CS refers to the geological continental shelf of a state extending between 12 nautical miles and 200 nautical miles from shore.⁶ The EEZ, however, refers to the water column which extends up to 200 nautical miles from shore.⁷

³ United Nations Convention on the Law of the Sea (Montego Bay, 10 December 1982) 1833 UNTS 3, 21 ILM 1261 (1982), *entered into force* 16 Nov. 1994 (UNCLOS).

⁴ Convention on the Continental Shelf (Geneva, 29 April 1958) 499 UNTS 311; 15 UST 417; TIAS No 5578 *entered into force* 10 Jun. 1964 (CS Convention).

⁵ The Convention for the Protection of the Marine Environment of the North-East Atlantic (Paris, 22 September 1992) 2354 UNTS 67; 32 ILM 1069 (1993) *entered into force* on 25 Mar. 1998 (OSPAR Convention).

⁶ Art. 76 (1) of the UNCLOS.

⁷ Art. 57 of the UNCLOS.

2.1 The rights of coastal states

Beginning with Grotius' '*Mare Liberum*' (The Freedom of the Seas), sea users and coastal states operated under the principle that the sea was international territory and that "every nation is free to travel to every other nation, and to trade with it."⁸ But following the adoption of various conventions, including the UNCLOS, coastal states and sea users alike have various limited rights which vary across each of the aforementioned zones. Under the law of the sea, coastal states have full sovereignty over their land territory and over their territorial sea.⁹ This means that within their territorial sea, coastal states have full jurisdictional power to regulate all activities taking place within this zone,¹⁰ so long as the right of innocent passage of ships is upheld.¹¹ Within the EEZ and CS, however, a different legal regime exists. Coastal states possess various sovereign rights in both zones. Sovereign rights, unlike sovereignty, are best understood as a collection of rights which are limited and exist only where states have jurisdiction over particular sets of activities. They are, in essence, restricted to a functional purpose. Hence, one may refer to this jurisdiction as a 'functional jurisdiction'.¹² The International Law Commission describes such rights as including "all rights necessary for and connected with the exploitation of the continental shelf ... [including] jurisdiction in connection with the prevention and punishment of violations of the law."¹³

Coastal states, through their own laws and regulations, therefore define the conditions under which exploration and exploitation of the continental shelf may be conducted.¹⁴ In the EEZ and CS, these sovereign rights include the right to explore for and exploit resources in their EEZ or on their CS. Such rights are still actionable only when seeking to produce energy from the water, currents and winds, or serve another economic purpose.¹⁵ The coastal State's rights over the continental shelf are, however, not unlimited. Hence, the exercise of such rights over the CS "must not infringe or result in any unjustifiable interference with navigation and other rights and freedoms of other States as provided for in this Convention."¹⁶ Similar restrictions on the rights of coastal states exist in the EEZ. This is because all States, whether coastal or land-locked, enjoy, subject to other relevant provisions in the UNCLOS, the freedom of the high seas as referred to in article 87, as well as other internationally lawful uses of the sea related to these freedoms.¹⁷

In exercising their sovereign rights, Article 60 of the UNCLOS provides that coastal states therefore have "the exclusive right to construct and to authorise and regulate the construction, operation and use of artificial islands,

⁸ Grotius, *Mare Liberum*, (Lodewijk Elzevir, 1609) p. 7.

⁹ Art. 2 of the UNCLOS.

¹⁰ Art. 2 of the UNCLOS.

¹¹ Art. 17 of the UNCLOS.

¹² CS Convention, art. 2, para.1, art.5, para. 2, art. 5, para. 4.

¹³ Yearbook of the International Law Commission (1956) Vol. II, 297.

¹⁴ Churchill and Lowe, *The Law of the Sea*, (Manchester University Press. 3rd edn, 1999) 153.

¹⁵ Art. 56 (1) of the UNCLOS (EEZ); Art. 77 of the UNCLOS (CS).

¹⁶ Art. 78(2) of the UNCLOS.

¹⁷ Art. 58 (1) of the UNCLOS.

installations and structures for the economic exploitation and exploration of the zone”.¹⁸ This right is also limited because artificial islands, installations and structures “may not be established where interference may be caused to the use of recognized sea lanes essential to international navigation.”¹⁹ Furthermore, the principle of the freedom of the high seas, as well as the lawful uses of the sea related thereto, also limit the rights of coastal States when conducting activities or authorising activities within the EEZ consistent with their ‘functional jurisdiction’, which includes the construction, operation and use of the offshore infrastructure, referred to in Article 60 of the UNCLOS.

2.2 Responsibilities when constructing offshore infrastructure

Although coastal states have various rights in the EEZ and on the CS, several obligations and responsibilities also exist for coastal states. One such responsibility is the provision of due notice. Coastal states must provide due notice to other sea users of their construction and existence, while also prohibiting their construction “where interference may be caused to the use of recognized sea lanes essential to international navigation”.²⁰

The obligation to decommission installations and structures is another responsibility for coastal states. UNCLOS provides, with regard to installations or structures constructed in the EEZ or on the continental shelf, that:

*“[a]ny installations or structures which are abandoned or disused shall be removed to ensure safety of navigation, taking into account any generally accepted international standards established in this regard by the competent international organization”.*²¹

In particular, one should note that this removal obligation omits ‘artificial islands’, referring only to ‘installations or structures’. Given that the purpose of this obligation is to “ensure safety of navigation” and the freedom of the seas for other sea users, it is particularly interesting that ‘artificial islands’ are omitted therefrom. It seems questionable that an ‘artificial island’, once disused or abandoned, does not interfere with the use of the sea in the same way as an ‘installation or structure’ does. If this is the case, as this omission seems to provide, would be contrary to the basic duty to have due regard to the rights of other parties seeking access to the marine area.²² Nevertheless it is wise to assess the “generally accepted international standards established in this regard” to which Article 60 (3) UNCLOS refers, in order to provide a greater understanding of this provision.

In addition to the provisions included in UNCLOS, further rules on the decommissioning of offshore infrastructure are included in the “generally accepted international standards established in this regard by the

¹⁸Art. 60 (1) of the UNCLOS.

¹⁹ Art. 60 (7) of the UNCLOS.

²⁰ Art. 60 (7) of the UNCLOS.

²¹ Art. 60 (3) of the UNCLOS.

²² “Such removal shall also have due regard to fishing, the protection of the marine environment and the rights and duties of other States.” See: Art. 60 (3) of the UNCLOS.

competent international organization” referred to in article 60 of UNCLOS. Two key sets of standards, as identified previously in the North Sea Energy program,²³ are the 1989 Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental Shelf and in the Exclusive Economic Zone issued by the International Maritime Organisation²⁴ and the OSPAR Convention and the OSPAR Decision 98/3 on Disposal of Disused Offshore Installations also govern the decommissioning of infrastructure in the North Sea.²⁵ In assessing these international maritime standards relevant to the decommissioning of offshore infrastructure, it seems quite clear that the infrastructure referred to in those standards is typically the ‘installations and structures’ as mentioned in Article 60 (3) UNCLOS. Aside from removal, there is a possibility to re-use existing offshore infrastructure, as extensively researched by the North Sea Energy program, including “artificial islands, installations and structures”, though no provisions in international law explicitly provide for this.²⁶

2.3 Interim conclusions

Under international law, coastal states and sea users alike have various sets of rights and responsibilities relevant within each maritime zone indicated by the UNCLOS. Coastal states have full sovereignty within their territorial sea, which stretches to 12 nautical miles from shore, and may regulate the territorial sea so long as the right of innocent passage of sea users is unaffected. In the EEZ and CS, which stretches to a maximum of 200 nautical miles, coastal states also possess various sovereign rights, actionable only when serving an economic purpose including the production of energy from the water, currents and winds. These rights are limited by the rights of other states and sea users within the EEZ, including the various rights associated with freedom of the sea, as dictated by the UNCLOS.

In exercising such sovereign rights, coastal states may therefore authorise the construction of offshore infrastructure within their EEZ for economic purposes, in so far as it does not obstruct the freedom of the sea or recognised sea lanes essential to international navigation. This right is accompanied by various obligations, such as the provision of due notice of their construction. Coastal states are also obligated to remove ‘installations and structures’ which are disused or abandoned. This is done so under the premise that they pose a danger to the safety of navigation and is buttressed by international maritime standards. However, a

²³ Drankier and Roggenkamp, *North Sea Energy II Regulatory Framework: Barriers or Drivers for Offshore System Integration*: Deliverable B.1, (2019), p.11 < https://www.north-sea-energy.eu/documents/NSE2_Deliverable%20B1_draft.pdf > accessed 30 January 2020

²⁴ International Maritime Organisation Assembly resolution A.672(16) Guidelines and Standards for the Removal of Offshore Installations and Structures on the Continental Shelf and in the Exclusive Economic Zone, adopted on 19 October 1989, (IMO Guidelines).

²⁵ OSPAR Decision 98/3 on the Disposal of Disused Offshore Installations (OSPAR Decision 98/3)

²⁶ Drankier and Roggenkamp, *North Sea Energy II Regulatory Framework: Barriers or Drivers for Offshore System Integration*: Deliverable B.1, (2019), p.11, p.29-32; Andreasson and Roggenkamp, *Regulatory Framework: Legal Challenges and Incentives for Developing Hydrogen Offshore*, North Sea Energy 3, (2020), p. 20

simple examination of Article 60 (3) UNCLOS reveals that ‘artificial islands’ are not expressly required to be removed. Hence, once an artificial island is constructed, a coastal state is not expressly obligated to remove it, should it become disused or abandoned. This omission presents considerable confusion as an ‘artificial island’, once disused or abandoned, likely interferes with the freedom of the sea, which is contrary to the basic duty to have due regard to the rights of other parties seeking access to the marine area.²⁷ One could also make the claim that regulations on the construction of artificial islands should, in fact, be stricter than ‘installations or structures’, given the permanent nature of their construction, unlike ‘installations or structures’ which are viewed as temporary prior to their construction and throughout their lifespan.

As section 3 will analyse, the UNCLOS does not provide for a definition of an ‘artificial island’. The lack of a definition of an ‘artificial island’ or an ‘installation or structure’ means that even if it is the case that an ‘artificial island’ need not be removed once abandoned or disused, how then is an ‘artificial island’ to be distinguished from an ‘installation or structure’? With respect to an energy island, section 3 also seeks to identify how such a development might be defined within this framework and how the issues which have arisen thus far may impact on its development.

²⁷ “Such removal shall also have due regard to fishing, the protection of the marine environment and the rights and duties of other States.” See: Art. 60 (3) of the UNCLOS.

3 Defining an energy island in Law

In order to assess the regulation of an energy island it is necessary to legally define an energy island. As detailed throughout Work Package 3.6, an energy island will essentially be an elevation off the Dutch coast created by the placement of material, comprised of sand and gravel, along with wave barriers created by the placement of rock. Facilitating the purpose of energy production from renewable sources, it is foreseen that an energy island will be a permanent construction. As Section 2 provides, various terms are provided for in international law, of which one or more may be applicable to an energy island. This section therefore seeks to analyse how an energy island might be defined in law.

3.1 Definitions under international law

The UNCLOS contains a framework for defining certain objects which occupy a presence in the sea. As outlined in Section 2, Article 60 UNCLOS makes reference and includes provisions on objects such as 'artificial islands', 'installations' and 'structures'. However, one of the failures of the UNCLOS regime is that no definition of either of these objects is provided in UNCLOS, nor is any detail on how one might distinguish them from each other. Hence, it is difficult to define what an energy island is in law. But while one might initially struggle to define what an energy island is, it might be more fruitful to first determine what an energy island is not.

There are essentially two possible categorisations for an energy island under international law which may include an energy island. The first is the definition of an 'island' under Article 121(1) UNCLOS, which defines it as "a naturally formed area of land, surrounded by water, which is above water at high tide." The second is the categorisation of 'artificial islands', 'installations' and 'structures' under Article 60 UNCLOS. One should be mindful that within this second category further distinction between these terms is required, but let us first assume that an energy island may fall between either category. Although international law also provides details on other objects such as 'rocks',²⁸ 'reefs',²⁹ and 'low-tide elevations',³⁰ none are likely to fit the definition of an energy island under their ordinary meaning.

An energy island might therefore either be defined either as an 'island', or as an 'artificial island', 'installation' or 'structure'. It is necessary to determine which best fits the description of an energy island.

3.2 The definition of natural 'islands' under international law

²⁸ Art. 121(3) of the UNCLOS.

²⁹ Art. 6 of the UNCLOS.

³⁰ A "low tide elevation" is a naturally formed area of land which is surrounded by and above water at low tide but submerged at high tide, see: Art. 13 of the UNCLOS.

Article 121 (1) UNCLOS defines an island as “a naturally formed area of land, surrounded by water, which is above water at high tide.” This is an interesting definition, particularly because the characteristics of what constitutes an ‘island’, i.e. that is an “area of land, surrounded by water, which is above water at high tide,” seem to align with the description of an energy island. However, the requirement that an ‘island’ be “naturally formed” would theoretically distinguish it from an energy island, as it is man-made. But while UNCLOS refers to an island as a “naturally formed area of land” it does not provide a definition as to what constitutes an ‘island’ as being “natural formed.” One might infer that something which is “naturally formed” is anything that is not man-made, that is, constructed through processes caused by human activity. That islands must be “naturally formed” does not mean that islands built by people with natural materials, such as sand and stone, can be qualified as “island”. Instead, they are, as Oude Elferlink outlines, defined as an ‘artificial island’ because even though natural materials are used, they are formed through human action.³¹ Furthermore, the process by which this might be determined is relatively simple, since one need only look to the point at which the ‘island’ came into being in the first place. As Anderson remarks “however large [an artificial island] is made, however many people live on it and however long a time ago it was built up, it still remains an artificial island because it was artificially formed.”³²

Of course there may be a possibility that islands, which are newly formed by natural processes after human intervention in the natural environment, will in principle fall under Article 121 UNCLOS. Indeed, rising sea levels due to climate change has also forced the governments of many naturally-formed ‘islands’ to take measures in order to maintain the requirement of their status of “being above water at high tide”. Thus the use of artificial works have the potential not only of producing land which is similar in nature to a natural ‘island’, but can also be a means by which a natural formation loses its status as such, has perhaps created the need for a complete re-definition of the meaning of an ‘island’ in international law.³³ This is due to the fact that UNCLOS specifically ensures that States are prohibited from appropriating areas of the sea by installing artificial constructions. Hence, Article 60 (8) UNCLOS specifically states:

“Artificial islands, installations and structures do not possess the status of islands. They have no territorial sea of their own, and their presence does not affect the delimitation of the territorial sea, the exclusive economic zone or the continental shelf.”

³¹ Oude Elferlink, Analyse van het internationaalrechtelijk kader inzake kunstmatige eilanden in de Nederlandse exclusieve economische zone (EEZ), Netherlands Institute for the Law of the Sea (NILOS), NILOS Paper Series (2018), p.17. <https://www.uu.nl/sites/default/files/kunstmatige_eilanden_versie_30_10_2018_met_isbn.pdf> accessed 25th November 2019.

³² Anderson, Some Aspects of the Regime of Islands in the Law of the Sea, Intl. Journal of Marine and Coastal Law 31 (2017), p.325.

³³ Galea, Artificial Islands in the Law of the Sea, University of Malta, (2009), p.45 <<https://www.blue21.nl/wp-content/uploads/2015/10/Artificial-Islands-in-The-Law-of-the-Sea.pdf>> accessed 17th October 2019

It follows therefore, that when recognising any distinction between an 'island' and an 'artificial island', complex assessments of law and fact are required.³⁴ One might, therefore, look to the Permanent Court of Arbitration (PCA) case between the Philippines and China³⁵ which involved the construction of 'artificial islands' in the South China Sea. Here the PCA Tribunal determined that "[...] as a matter of law, human modification cannot change the seabed into a low-tide elevation or a low-tide elevation into an island".³⁶ Hence, China's structures built atop low-tide elevations constituted installations or structures within the meaning of Article 60(1) UNCLOS. Furthermore, the development of an artificial island by elevating what was originally a platform that submerged at high tide into an island that was permanently exposed, constituted an island that is undoubtedly 'artificial' for the purposes of Article 60.³⁷ Hence, it can be determined that any human activity which modifies the seabed or materials deposited thereon, renders any subsequent, permanently-exposed area of land as an 'artificial island' under international law.

It seems therefore that an energy island would not be defined as an 'island' under international law. When assessing the ordinary meaning of 'natural formation', it seems highly unlikely for an energy island to be recognised as an island, particularly because it is not formed through any natural processes. Moreover, UNCLOS specifically seeks to prohibit countries from expanding their territory through the construction of artificial elevations, as evidenced in the China v Philippines case. As such it would be highly unlikely for an energy island to be deemed an 'island', which would therefore possess its own territorial sea.

3.3 'Artificial islands, installations or structures'

This section has thus far determined that an energy island as foreseen by the North Sea Energy program, i.e. an exposed area of land created by the deposition of dredged materials in the North Sea, would not be deemed an 'island', nor would it be deemed a 'rock', 'reef' or 'low-tide elevation'. Instead, an energy island as foreseen by the North Sea Energy program, would ordinarily be understood to be a man-made or artificially created island. Let us assume therefore that under international law an energy island would most likely be deemed an 'artificial island' to which UNCLOS refers. As outlined in Section 2, Article 60 UNCLOS provides that:

"In the exclusive economic zone, the coastal State shall have the exclusive right to construct and to authorize and regulate the construction, operation and use of:

(a) artificial islands;

(b) installations and structures for the purposes provided for in article 56 and other economic purposes;

³⁴ Oude Elferink, Artificial Islands, Installations and Structures, Max Planck Encyclopedia of Public International Law MPEPIL, para.4.

³⁵ Philippines v China, Award, PCA Case No 2013 <<https://pcacases.com/web/sendAttach/2086>> accessed 3 Dec. 2019.

³⁶ *ibid*, para 305.

³⁷ *ibid*, para 1037.

(c) installations and structures which may interfere with the exercise of the rights of the coastal State in the zone.”

Two problems seem to emerge when trying to determine whether an energy island is indeed an 'artificial island'. First, there is no definition in Article 60 of an 'artificial island, installation or structure', nor is there anywhere else in international law. Furthermore, as evidenced in Article 60 UNCLOS, 'artificial islands, installations or structures' are typically referred to in UNCLOS in tandem, rather than individually. The remainder of this section therefore seeks to address these issues.

3.3.1 Defining 'artificial islands, installations or structures'

Although UNCLOS does not provide a definition for artificial islands, installations or structures, other sources of international law provide insight. Article 1 (1) of the OSPAR Convention, for example, defines an 'offshore installation' as “any man-made structure, plant or vessel or parts thereof, whether floating or fixed to the seabed, placed within the maritime area for the purpose of offshore activities.” This is a quite broad definition as it seems to encompass anything which is used for offshore activities, including vessels, and would, it seems, almost certainly include artificial islands within its scope. An equally broad definition can also be found in other sources of international law. Article 1 (3) of the 1988 Protocol for the Suppression of Unlawful Acts against the safety of fixed Platforms located on the Continental Shelf (SUA PROT),³⁸ for example, states that 'fixed platforms' means “an artificial island, installation or structure permanently attached to the seabed for the purpose of exploration or exploitation of resources or for other economic purposes.” In this sense, an 'artificial islands, installations or structures' are essentially grouped together and seen as generally of similar characteristics and to be treated the same. It is also quite interesting that they are also viewed as being “permanently attached to the seabed”, given that a fixed platform would only be temporarily be attached to the seabed for the purpose of exploration or exploitation of resources or for other economic purposes.

It seems therefore that under international law an energy island would most likely be regarded as an 'artificial island' although the basis of such a characterisation would not be made on provisions in international law which describe or define the meaning of an 'artificial island'. This is quite problematic given the various provisions across international and regional conventions which make various references to 'artificial islands'. Perhaps more interesting however, is the grouping of various terms, such as 'artificial islands' with other forms of offshore infrastructure such as 'installations' 'structures' or even 'fixed platforms'. The following section seeks to understand how this grouping is quite problematic when one attempts to align the ordinary understanding of such infrastructure with how international law seems to view them.

³⁸ 1988 Protocol for the Suppression of Unlawful Acts against the safety of fixed Platforms located on the Continental Shelf (Rome, 10 March 1998) UNTS 1678, I-29004, *entered into force* 1 Mar. 1992 (SUA PROT).

3.3.2 Distinguishing ‘artificial islands’ from ‘installations or structures’

As outlined, an ‘artificial island’ and an ‘installation’ or ‘structure’ are generally defined as the same in international law. This can be problematic because an ‘artificial island’ is not essentially the same as an ‘installation’ or ‘structure’ at least from its physical characteristics.

Soons establishes that there are four types of offshore facilities: (1) Floating structures, kept at the same position by anchors or similar means; (2) Fixed structures, resting upon the seabed via piles or tubes driven into the ground; (3) Concrete structures; and (4) Structures created by the dumping of natural substances like sand, rocks and gravel.³⁹ In assessing these different categories, Oude Elferink draws a distinguishing line between ‘artificial islands’ from ‘installations’ or ‘structures’ as the latter “are built from man-made or natural materials that are piled on the seabed to form an area of land.”⁴⁰ As Andreeff contends, “the crucial distinction is that ‘installation’ and ‘structure’ are suggestive of man-made buildings while ‘artificial island’ is suggestive of man-made area of land”.⁴¹ Hence, the materials used in the construction of an ‘artificial island’, which are typically viewed as more natural materials like sand or gravel, provide a defining characteristic by which it cannot be deemed to be an ‘installation’ or a ‘structure’, which are man-made with non-natural materials.⁴² From an ordinary understanding therefore, it seems unwise to define an ‘artificial island’ and an ‘installation or structure’ as essentially the same.

But while a reasoned argument against defining an ‘artificial island’ as essentially the same as other forms of offshore infrastructure based on descriptive illogic might be provided, others instead prefer to assess the purpose of different forms of offshore infrastructure when attempting to distinguish them. Oude Elferink, for example, claims that such an approach is overly restrictive given that artificial islands “must not necessarily consist of “natural substances.”⁴³ Instead, one might look to the purpose for an ‘artificial island’ versus an ‘installation’ or ‘structure’. As examined in Section 2, Article 56 UNCLOS is quite broad in how it refers to the right of coastal States to construct ‘artificial islands, installations or structures’ in the EEZ, since they need only be constructed for the purposes of assisting “activities for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds.” This means that in practice, there is little distinction to be found between an ‘artificial island’ or an ‘installation or structure’. This seems to align with other provisions in international law, such as Article 1 of the SUA PROT, which defines a ‘fixed platform’ as “an artificial island, installation or structure permanently attached to the seabed for the purpose of

³⁹ Soons, *Artificial Islands and Installations in International Law*, Occasional Paper Series No.22 (1974) p.1.

⁴⁰ Oude Elferink, *Artificial Islands, Installations and Structures*, Max Planck Encyclopedia of Public International Law MPEPIL, para.5

⁴¹ Andreeff, *Legal Implications of China's Land Reclamation Projects on the Spratley Islands*, 47 N.Y.U.J. Int'l L. & Pol. 855, 910 (2015) p.882.

⁴² *ibid.*

⁴³ Oude Elferink, *Analyse van het internationaalrechtelijk kader inzake kunstmatige eilanden in de Nederlandse exclusieve economische zone (EEZ)*, Netherlands Institute for the Law of the Sea (NILOS), NILOS Paper Series (2018), p.18

exploration or exploitation of resources or for other economic purposes.” Hence, when examining the use of an ‘artificial island’ or an ‘installation or structure’, as Oude Elferlink claims, “there is no difference between the rights and jurisdiction of the coastal State over artificial islands and such installations”.⁴⁴

But this claim is jeopardised by way of Article 60 (3) UNCLOS, which as outlined in Section 2.2, clearly omits ‘artificial islands’ from a requirement to be removed once abandoned or disused. Article 60 UNCLOS simply provides that “any installations or structures which are abandoned or disused shall be removed to ensure safety of navigation ...”. If the basis for a removal obligation seems to be the purpose of ensuring the safety of navigation and, more broadly, the freedom of the seas, why then is an ‘artificial island’ exempt? In practice an ‘artificial island’, whether disused or still in use, would provide an obstacle to navigation in the same way an ‘installation or structure’ would. Furthermore, to what extent should an ‘artificial island’ not be removed once abandoned or disused? Under Article 60 (3) UNCLOS, one could make the claim that any buildings or infrastructure thereon need also not be removed upon abandonment or disuse, unless of course they are deemed as ‘installations or structures’ under international law. Nevertheless, the requirement to remove seems to distinguish between ‘artificial islands’ and ‘installations or structures’, even though no way of identifying such a distinction by definition seems evident in international law.

This section has thus far assessed the similarities and differences in how international law treats ‘artificial islands, installations and structures’. Although some have attempted to distinguish ‘artificial islands’ from ‘installations or structures’, no tangible distinction seems to emerge when examining provisions in international law. Under an ordinary understanding of an ‘artificial island’, which could be described as a man-made island constructed with natural materials, it seems as though an energy island would fit this description. However, even though an energy island is, in essence, different to an ‘installation or structure’ which is man-made with artificial materials, the law does not seem to treat it any differently.

⁴⁴ *ibid*

3.4 Interim conclusions

This section sought to analyse how a sand-based energy island would be defined in law. Various definitions exist in international law relating to objects in the sea. The most relevant definitions for an energy island are an 'island' and 'artificial islands, installations and structures'. Article 121 UNCLOS defines an 'island' as "a naturally formed area of land, surrounded by water, which is above water at high tide." As an energy island would be formed through human processes, it therefore seems that it would be inapplicable to this definition and could therefore not be deemed an 'island' in law. This was indeed confirmed by the China v Philippines arbitration, which determined that islands artificially constructed in the Chinese government in the South China Sea could not be defined as 'islands' under international law.

As an energy island could not be defined as a natural 'island' it seems preferable to instead define it as an 'artificial island'. Article 60 UNCLOS refers to the exclusive right of States to construct 'artificial islands, installations and structures'. It does not however define what either of these terms actually means, nor does it distinguish between them. This is consistent with other provisions in international law, such as the SUA PROT, wherein Article 1 defines a "fixed platform" as "an artificial island, installation or structure permanently attached to the seabed for the purpose of exploration or exploitation of resources or for other economic purposes." This would make sense in theory, except that, as evidenced in Section 2, Article 60 (3) UNCLOS omits 'artificial islands' from the obligation to remove 'any installations or structures which are abandoned or disused'. It therefore seems that while international law seems to regard 'artificial islands, installations and structures' as much the same in theory, it distinguishes them in practice.

Various commentators have attempted to distinguish an 'artificial island' from an 'installation or structure' by placing emphasis on the materials used when constructing an 'artificial island' which tend to be from natural sources (i.e. sand, gravel or rocks), versus those used in constructing 'installations and structures' which tend to be made from man-made sources (i.e. concrete, steel). However, it may be preferable instead to place emphasis on the purpose for which an 'artificial island' or an 'installation or structure' is constructed. Here, emphasis is placed instead on the function of 'artificial islands' and 'installations or structures' which, under international law, are distinguished. This position which the law seems to have taken seems consistent, but for Article 60 (3) UNCLOS which omits 'artificial islands' from an obligation to be removed once abandoned or disused. One might, in theory, accept this given that artificial islands are, by their nature different to 'installations or structures' However, Article 60 (3) UNCLOS states that the purpose for obligating such removal is to ensure the safety of navigation, which in practice is not distinctive in any real sense between an 'artificial islands' or 'installations or structures'. Moreover, international law provides no definition at all for an 'artificial island' or an 'installation or structure'.

As stated, an energy island is envisaged as being a permanent man-made elevation off the Dutch coast, which would facilitate the production of renewable energy. Under international law, an energy island would likely be defined as either an 'artificial island, installation or structure' under Article 60 UNCLOS, but it is unclear how it

can indeed be defined under the current provisions as no details are provided to assist such a determination. Ultimately, this poses difficulties for an energy island developer should they seek assurances that an energy island need not be removed should it become abandoned or disused.

4 Permit obligations under Dutch law

In exercising its functional jurisdiction in the North Sea, various national laws of the Netherlands apply in the Dutch EEZ and CS.⁴⁵ When seeking to construct a sand island in the Dutch EEZ and on the Dutch continental shelf, Dutch regulation applies, if explicitly provided so in the relevant law. As stated, the North Sea Energy program envisages an energy island as being a man-made, sand elevation in the Dutch EEZ, designed to facilitate the production and transport of energy offshore. The purpose of an energy island is foreseen as being two scenarios in which an energy island would house: (1) a hydrogen electrolyser, which would produce hydrogen using electricity generated by offshore wind farms, or (2) a hydrogen electrolyser and a substation to transport electricity generated by offshore wind farms.⁴⁶ Additional uses for an energy island are possible, though out of the scope of this report.

There are several pieces of legislation which govern activities conducted in the Dutch EEZ and on the Dutch continental shelf. The Mining Act (*Mijnbouwwet*)⁴⁷, the Wind Energy at Sea Act (*Wet Windenergie op Zee*)⁴⁸ and the Earth Removal Act (*Ontgrondingenwet*)⁴⁹ cover sector-specific activities in the North Sea, namely the exploration and production of hydrocarbons, the production of wind energy and excavation and dredging activities, respectively.

Since an energy island as envisaged by the North Sea Energy program would not be involved in activities related to the exploration or production of hydrocarbons, the Mining Act would likely not apply. The Wind Energy at Sea Act would, however, apply to an energy island, insofar as it would be connected to offshore wind farms, but would not regulate the island itself as no provision in the act provides for any regulation in constructing such an island. That regulation would, in fact, partly come in the form of the Earth Removal Act which would regulate the construction process of an energy island, but not the permit to build such an energy island itself.

But whereas the Earth Removal- and Wind Energy at Sea Acts are *lex specialis*, the Water Act (*Waterwet*)⁵⁰ and its secondary legislation, the Water Decree (*Waterbesluit*)⁵¹ and Water Regulation (*Waterregeling*)⁵² are *lex generalis* by regulating all other activities in Dutch waters, not covered by sector-specific legislation. The Water Act regulates the licencing regime for internal waterways and offshore activities in the Netherlands and,

⁴⁵ Whereas national law applies automatically on the territory and in the territorial waters of the Netherlands, it must be explicitly stated under each relevant law whether it is applicable to the EEZ or CS.

⁴⁶ For a more comprehensive assessment of the scenarios involving an energy island, see: Van der Veer and others, *Offshore Energy Islands: Deliverable 3.8, North Sea Energy 3, 2020, p.7*

⁴⁷ Mining Act (*Mijnbouwwet*) of 31 October 2002.

⁴⁸ Wind Energy at Sea Act (*Wet windenergie op zee*) of 24 June 2015.

⁴⁹ Earth Removal Act (*Ontgrondingenwet*) of 27 October 1965

⁵⁰ Water Act (*Waterwet*) of 29 January 2009.

⁵¹ Ministerial Water Decree (*Waterbesluit*) of 30 November 2009.

⁵² Water Regulation (*Waterregelingen*).

according to Articles 1(2) and 1(4), is applicable to the Dutch territorial waters and the EEZ. The Water Act and its accompanying legislation therefore provides a general framework for the regulation of all activities taking place in water systems to the extent that such activities are not partially or entirely regulated by specific sectoral legislation,⁵³ like the Wind Energy at Sea Act.

This section seeks to understand whether an energy island could legally be constructed on the Dutch CS or in the Dutch EEZ under the current Dutch legal framework and what permits are necessary to obtain when seeking to construct and operate an energy island.

4.1 Water Act

The Water Act outlines the primary regulations of activities in the Dutch EEZ and seeks to enforce the marine spatial planning policy in the North Sea, envisaged by the 'North Sea 2050 Spatial Agenda'.⁵⁴ There are five themes which emerge in this policy: (i) building with North Sea nature, (ii) energy transition at sea, (iii) multiple/multi-functional use of space, (iv) connection between land and sea, and (v) accessibility/shipping. These are also incorporated in the 'Policy Document on the North Sea 2016-2021'.⁵⁵ This describes the current situation on the North Sea, maps out future developments and records the policy choices for the upcoming planning period. The aim is to prevent fragmentation and promote the efficient use of the space, while giving market players the scope to develop initiatives and make spatial choices within certain limits.⁵⁶

As outlined earlier in this section, sector-specific legislation would regulate specific aspects of an energy island, where applicable. The Water Act, however, regulates activities not covered by sector-specific legislation, including a permit to construct or conduct all activities in the North Sea. A permit to construct an energy island in the North Sea would therefore be regulated by the Water Act, while an additional permit to construct an electrolyser and subsequently produce hydrogen thereon may also be required.⁵⁷

⁵³ If two laws govern the same factual situation, a law governing a specific subject matter (*lex specialis*) overrides a law governing general matters (*lex generalis*).

⁵⁴ Government of the Netherlands, 'North Sea 2050 Spatial Agenda: The report of joint research into the long-term potential of sea and coastal areas, translated into a vision, series of ambitions, opportunities, points of action and maps', 2014, available at: <<https://www.government.nl/documents/policy-notes/2014/07/28/north-sea-2050-spatial-agenda>> accessed 17 Oct 2019.

⁵⁵ Government of the Netherlands, *Policy Document on the North Sea 2016-2021*, Policy Note, 2015, available at: <<https://www.government.nl/documents/policy-notes/2015/12/15/policy-document-on-the-north-sea-2016-2021-printversie>> accessed 18 Oct 2019.

⁵⁶ For a more detailed outline, see: Kafas, A., et al, *Status quo report on offshore energy planning provisions in the North Sea region: Annex 2 National marine spatial planning and licensing frameworks in North Sea countries and links to offshore renewable developments*, NorthSEE, WP.5, 2019, p. 21, available at <<https://northsearegion.eu/media/4932/annex-2-marine-planning-licensing-frameworks-northsee-offshore-energy-status-quo-report-final-with-intro-120418.pdf>> accessed 21 Nov 2019.

⁵⁷ For a more detailed outline on the legal implications of the production of hydrogen offshore, see: Andreasson and Roggenkamp, *Regulatory Framework: Legal Challenges and Incentives for Developing Hydrogen Offshore*, North Sea Energy 3, (2020), p.55

4.1.1 Water permit

Article 6.5 of the Water Act lists certain activities that may be prohibited in national waters without possession of a water permit awarded by the Ministry of Infrastructure and Environment.⁵⁸ Article 6.13 of the Ministerial Water Decree (*Waterbesluit*) specifies that it is forbidden to use the North Sea without permission to do so from the Ministry, as referred to in Article 6.5 of the Water Act. Subsection (c) specifically prohibits the installation or laying down of installations or cables and pipelines, or to leave them in place, while subsection (d) specifically prohibits construction activities. Since the development of a PtG facility on an energy island in the North Sea falls under both subsections (c) and (d), a water permit must be obtained by the project developer under the Water Act.⁵⁹ Article 6.12 of the Water Regulation (*Waterregelingen*) excludes an activity from a water permit if the activity, due to the nature, limited size or short duration, has no adverse influence on the water management. This would however not be the case for a permanent hydrogen production facility on an energy island.

Article 2(1) of the Water Act outlines that the purpose of the Act is to (a) prevent flooding and water scarcity, (b) assure and improve the chemical and ecological quality of water systems, and (c) assure the execution of societal functions of the water systems. The application for a water permit is non-competitive and is assessed based on the proposed actions of the applicant against the general purposes of the Act.⁶⁰ Only when the proposed project is incompatible with these purposes can the Minister of Transport, Public Works and Water Management⁶¹ refuse the request.⁶² It follows therefore, that a permit application would be refused if the construction of an energy island in the North Sea would: hinder the protection against flooding, swamping or water shortages,⁶³ or hinder the chemical and ecological status of water systems or prevented them from fulfilling societal functions,⁶⁴ in the Dutch EEZ.⁶⁵ Article 6 (2) of the Water Act provides that the length of a permit is determined by the Ministry according to each application, although Article 6 (1) of the Water Regulation provides that a permit may not exceed 10 years in length.

Article 6 (20) provides that permits granted may be subject to certain conditions. These could include the provision of financial security for the fulfilment of certain obligations and for covering liability for damage resulting from adverse effects caused by the activity.⁶⁶ In addition, other conditions may include the “removal,

⁵⁸ Article 6.5 of the Water Act applies to the construction and operation of a PtG facility on an offshore platform. See: Andreasson and Roggenkamp, *Regulatory Framework: Legal Challenges and Incentives for Developing Hydrogen Offshore*, North Sea Energy 3, (2020), p.60.

⁵⁹ In general, the ‘function of the North Sea’ referred to in Art. 6(13) of the Ministerial Water Decree is to be interpreted narrowly. See: S. Handgraaf, *Milieurecht Totaal*, commentaar op art. 6.5 Wtw, aant. 1.

⁶⁰ Art. 6 (21) of the Water Act.

⁶¹ Art. 1 of the Water Act.

⁶² Art. 6 (21) of the Water Act.

⁶³ Art. 2 (1) (a) of the Water Act.

⁶⁴ Art. 2 (1) (b) of the Water Act.

⁶⁵ Art. 6 (11) (1) of the Water Act.

⁶⁶ Art. 6(20) (a) of the Water Act.

compensation or limitation of adverse effects for the water system of the activity permitted or the discontinuation of such activity.”⁶⁷

The conditions set by the Water Act are relatively vague and provide little detail, both in the size and location of an energy island, as well as its function. Furthermore, the 10-year limit to a water permit’s applicability would provide considerable difficulties to an energy island developer, particularly because due to its short term. It seems relatively unclear what would happen upon completion of this 10-year term and whether an operator of an energy island could simply re-apply for the same permit or whether the island would have to be de-constructed as a consequence.

De-constructing or removing an energy island could prove quite problematic when one considers the enormous technical and financial challenges involved when seeking to de-construct a sand island.⁶⁸ As outlined in Section 2, international law requires the Dutch state to remove any disused or abandoned ‘installations or structures’ in order to ensure the safety of navigation.⁶⁹ However, ‘artificial islands’ are omitted from this obligation despite the fact that in practice, a disused ‘artificial island’ might affect the safety of navigation to the same or similar effect as an ‘installation or structure’ would. Furthermore, there is no explicit definition for an ‘artificial island’ in international law. This makes it rather difficult to concretely determine that an energy island is to be defined as an ‘artificial island’ and need not be removed. The considerable lack of clarity evident in international law regarding energy islands is equally apparent in Dutch law. Dutch law does not provide any reference to energy islands, ‘artificial islands’ or anything similar, leaving one to assume that an energy island would be treated the same within Dutch law as other offshore infrastructure, such as a wind turbine or offshore platform. Section 6 (20) of the Water Act provides that an obligation to remove *may* be imposed, also leaving open the possibility that such an obligation is not required, but again, it is unclear whether this would occur when applying for a water permit to construct a sand island in the North Sea.

It should be noted that spatial development rules in the Netherlands are to be merged, potentially affecting future offshore hydrogen activities. The forthcoming Environment Act (*Omgevingswet*)⁷⁰ will bundle 26 existing laws pertaining to activities including, *inter alia*, construction, environment, water, spatial planning and nature.

⁶⁷ Art. 6 (20) (b) of the Water Act.

⁶⁸ The World Energy Council estimates the costs associated with decommissioning oil and gas assets in the North Sea, not accounting for the required investments in wind energy, will total between 390 and 690 billion Euros, see: World Energy Council, *The North Sea Opportunity*, London, May 2017, p. 8.

⁶⁹ Art. 60 (3) of the UNCLOS.

⁷⁰ Environment Act (*Omgevingswet*) of 26 April 2016, see also Rijksoverheid, ‘Voorbeeldprojecten toekomstige Omgevingswet’, available at <<https://www.rijksoverheid.nl/onderwerpen/omgevingswet>>

Interestingly, improved facilitation of construction projects is an important purpose of the Environment Act.⁷¹ The new legislation is expected to enter into force in 2021, and will replace large parts of the Water Act.⁷²

4.2 Earth Removal Act

The construction of an energy island in the North Sea would likely involve the dredging of materials from the seabed in order to construct a sand-based island. Under the rules of the Earth Removal Act and Decree on Earth Removal in National Waters, it is likely that such activities would fall within the scope of Dutch regulation on excavation activities. This would involve the submission of a notification prior and following the construction of an energy island, as well as obtaining a grant for the permit to conduct dredging activities. The application for an earth removal permit is a relatively straightforward process and seems to present no obvious legal barriers.

The Earth Removal Act (*Ontgrondingenwet*)⁷³ covers the licencing system for all excavation works in the Netherlands and on the Dutch continental shelf. Excavation at sea is considered to take place if it occurs at a point where the soil is covered by the water of the sea at normal high tide or normal summer level⁷⁴ and equally applies to excavations on the Dutch continental shelf.⁷⁵

Article 3 prohibits any excavation work to take place without a permit. Possession of a permit is however, still subject to several requirements listed in Article 3, designed to promote and protect the interests of those affected by the excavation works. These are primarily concerned with the excavation works themselves, the redesign of the landscape or seascape envisaged and the adaptation of the area surrounding the planned redesign, as outlined in Article 3 (3).⁷⁶ However, Article 1 of the Decree on Earth Removal in National Waters (*Besluit ontgrondingen in rijkswateren*)⁷⁷ includes a number of exemptions to the requirement of Article 3 (3) of the Earth Removal Act, which includes: constructing, maintaining, modifying or clearing up flood defences, structures, installations and government works other than waterways and fairways.

Articles 3 and 4 of the Decree on Earth Removal in National Waters set out the process for obtaining an Earth Removal permit. Article 3 requires notifying the *Rijkswaterstaat* (the national authority responsible for the regulation of national waters) of the planned excavation, with at least four weeks' notice. Such a notification

⁷¹ Rijksoverheid, 'Nieuwe omgevingswet maakt omgevingswet eenvoudiger', available at <<https://www.rijksoverheid.nl/onderwerpen/omgevingswet/vernieuwing-omgevingsrecht>>

⁷² Ministerie van Infrastructuur en Milieu, *Omgevingswet: 'Ruimte voor ontwikkeling, waarborgen voor kwaliteit'*, available at <<https://www.rijksoverheid.nl/onderwerpen/omgevingswet/documenten/publicaties/2014/06/17/ienm-factsheet-omgevingswet>> accessed 20 February 2020

⁷³ Earth Removal Act (*Ontgrondingenwet*) of 27 October 1965.

⁷⁴ Art. 2 of the Earth Removal Act.

⁷⁵ Art. 4a of the Earth Removal Act.

⁷⁶ Art. 3(3) of the Earth Removal Act.

⁷⁷ Decree on Earth Removal in National Waters (*Besluit ontgrondingen in rijkswateren*) of 9 January 2008.

must also include relevant information, including *inter alia*, the party responsible, location in the North Sea where the excavation is to take place, as well the reason for the excavation works.⁷⁸ An additional notification is also required up to four week after the conclusion of the activities.⁷⁹ Article 4 sets out the process for granting a permit which includes submitting an application which contains largely the same information as required in the notifications under Article 3. A permit application is granted, unless the planned excavation works would conflict with spatial planning rules.⁸⁰

4.3 Wind Energy at Sea Act

The Wind Energy at Sea Act provides the legal framework for the offshore construction of wind farms. The North Sea Energy program is researching the possibility of constructing an energy island with a view to building a connection to offshore wind farms, in order to conduct certain activities like the production of hydrogen. Wind parks within the meaning of the Act includes the facilities necessary to produce electricity from wind energy, the connections between these facilities, and the connection of these facilities to the offshore grid.⁸¹ The Act provides the Minister of Economic Affairs and Climate with tools to turn designated wind energy areas, outlined in the national water plan, into areas containing offshore wind farms.⁸² These include the plot decision and the wind energy at sea permit, which form the steps in the process of constructing an offshore wind farm, which are outlined in the remainder of this subsection.

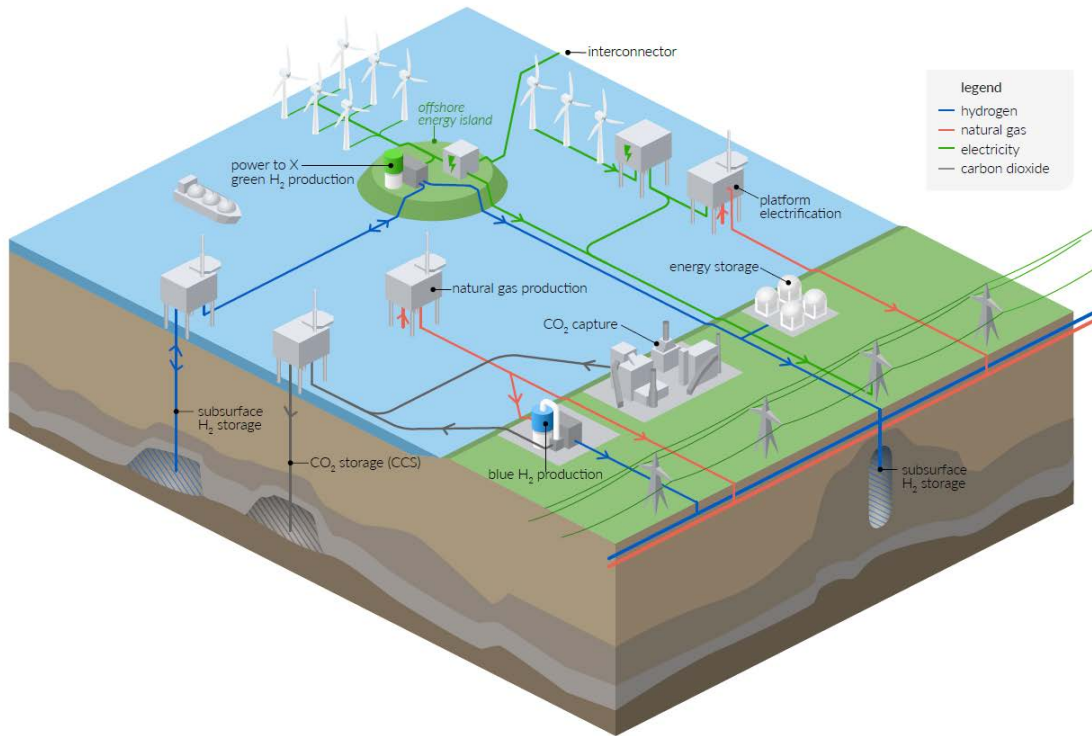
⁷⁸ Art. 3 (2) of the Decree on Earth Removal in National Waters.

⁷⁹ Art. 3 (3) of the Decree on Earth Removal in National Waters.

⁸⁰ Art. 10 (6) of the Earth Removal Act.

⁸¹ Art. 1 of the Wind Energy at Sea Act.

⁸² Drankier and Roggenkamp, *North Sea Energy II Regulatory Framework: Barriers or Drivers for Offshore System Integration*: Deliverable B.1, (2019), p.11 p.21 <https://www.north-sea-energy.eu/documents/NSE2_Deliverable%20B1_draft.pdf> accessed 1 Dec 2019.



Overview of offshore activities including (1) sub-station and/or (2) electrolyser on an energy island.

4.3.1 Plot decision

The national water plan designates certain areas for wind energy, although they are quite large in size. Therefore the Minister for Economic Affairs and Climate may organise areas into plots⁸³ which may be then offered to potential developers who may submit a tender for the award of an exclusive permit for the construction and operation of a wind farm on the concerned plot.⁸⁴ If the Minister decides that a particular area should be turned into a wind energy plot, a plot decision is taken. This includes information on the physical characteristics of the plot, the measures taken to limit the environmental impact of the wind park, a time frame for the future wind energy permit and the rights of third parties pertaining to the plot.⁸⁵ In addition, the plot decision also specifies the location of the cables connecting the wind park to the network.⁸⁶

4.3.2 Wind energy at sea permit

Applications for a wind energy at sea permit are submitted under a tendering procedure under Article 14 of the Wind Energy at Sea Act and are assessed on information including, *inter alia*, the provision of sufficient grounds to assume that the construction and operation of the wind farm is technically, financially and

⁸³ Art. 3 (3) of the Wind Energy at Sea Act.

⁸⁴ Arts.12 and 14 of the Wind Energy at Sea Act.

⁸⁵ Art. 4 of the Wind Energy at Sea Act.

⁸⁶ Art. 3 (2) of the Wind Energy at Sea Act.

economically achievable,⁸⁷ as well as the demonstration of its contribution to the flexibility of the supply profile of offshore wind farms in the future, if applicable.⁸⁸ In addition, for applicants, for whom no additional subsidy for the wind farm development is requested, the application should at a minimum describe details including, *inter alia*, the wind farm's design, time scheme for construction and exploitation, an estimation of the costs and benefits of the development.⁸⁹

Connection to the offshore transmission network

The likelihood of securing a connection to the offshore transmission network is dependent on the scenarios under which an energy island would be used, as were identified at the beginning of this section. For both scenarios (1) and (2), a key issue in the development of an energy island would be obtaining a connection from the offshore transmission network to an electrolyser thereon. With regard to securing a connection for the purposes of the transport of electricity under scenario (2), the situation is more complicated. Since 2016 the party responsible for the grid connection from offshore wind farms to the onshore connection point has been the TSO.⁹⁰ In the Netherlands, TenneT has been designated as the TSO.⁹¹ Under Article 15a of the Electricity Act, the offshore grid comprises the networks intended for the transport of electricity and connects one or more offshore wind farms to the national transmission network. The construction of the substations and export cables requires several administrative decisions including the amendment of the spatial plans (*bestemmingsplan*) of certain areas and municipalities onshore as well as the obtainment of various permits required when the cable is laid offshore.⁹² If the Minister of Economic Affairs takes a decision to that effect, all permits are prepared in one coordinated procedure, the *rijkscoördinatieregeling*, for which the Minister of Economic Affairs is responsible.

The offshore transmission network therefore only has the purpose of transporting electricity from offshore to the onshore grid and is not intended to facilitate offshore electricity supply and consumption. Due to this purpose of the offshore network, it is unclear if it will be legally permissible to establish a connection between

⁸⁷ Art. 14 of the Wind Energy at Sea Act.

⁸⁸ Article 3 (5)(c) of the Ministerial Order issued by the Minister of Economic Affairs and Climate Policy on 13 December 2019, no. WJZ/19201387, containing specific rules for permitting of offshore wind energy for Hollandse Kust (noord) Wind Farm Site V <<https://english.rvo.nl/sites/default/files/2019/12/Translation%20Ministerial%20Order%20for%20Permitting%20Offshore%20Wind%20Energy%20Hollandse%20Kust%20noord%20V.pdf>>

⁸⁹ Art. 23 (2) of the Wind Energy at Sea Act.

⁹⁰ Nieuwenhout, *Legal Framework and Legal Barriers to an Offshore HVDC Electricity Grid in the North Sea*: Deliverable 7.1, PROMOTioN, 2017, <https://www.promotion-offshore.net/fileadmin/PDFs/D7.1_-_Legal_framework_and_legal_barriers_to_an_offshore_HVDC_electricity_grid_in_the_North_Sea.pdf> accessed 17 Oct 2019 p. 95.

⁹¹ TenneT is certified as the TSO at the sea for the coming 10 years, see Article 10.3 of the Electricity Act. The certification decision is available in Dutch at: <<https://www.acm.nl/nl/publicaties/publicatie/16048/Besluit-certificering-TenneT-als-netbeheerder-van-het-net-op-zee>> accessed 18 Oct 2019.

⁹² For a more detailed outline of this procedure, see: Nieuwenhout, *Legal Framework and Legal Barriers to an Offshore HVDC Electricity Grid in the North Sea*: Deliverable 7.1, PROMOTioN, 2017, p.93.

offshore electricity infrastructure and an energy island, for the purpose of converting electricity into hydrogen.⁹³ Were a connection to be sought between the offshore transmission network and a substation on an energy island, then this situation may be more legally permissible.⁹⁴ In such a case, TenneT may view such a connection as essentially the same as what is envisaged in the current legislation, though this remains equally unclear.

Connection to offshore wind farms

In the same way as forming a connection from the offshore network, it is unclear if it will be legally permissible to establish a connection between offshore wind farms directly to an energy island, for the purpose of converting electricity into hydrogen, as is envisaged under scenarios (1) and (2).⁹⁵ Given that rules relating to the ownership of hydrogen production facilities offshore are also considerably unclear, it is unclear what consequences emerge relating to the ownership of hydrogen production facilities connected to offshore wind farms.⁹⁶ Similar to securing a connection to the offshore grid, securing a connection to offshore wind farms under scenario (2) faces additional complications. In this scenario, some electricity would pass through an energy island before being transported to the onshore grid, which might be seen as a mere extension of the connection between the offshore wind farm and the onshore grid, in the same way converter stations are currently viewed offshore. In such a case it would still fall on TenneT to establish such a connection, since TenneT is responsible for connecting offshore wind farms with the onshore grid. But even if it is legally permissible to connect wind farms directly to an energy island, it is unclear who would be responsible for establishing such a connection. TenneT is only legally responsible for facilitating the connection of offshore wind farms to the onshore grid, meaning that it may fall to an energy island operator to establish the necessary connections themselves. Of course this would mean they could not obtain a subsidy from the Dutch support scheme SDE+ for electricity produced offshore as the offshore-produced electricity must be fed directly into the onshore transmission network.⁹⁷ In practice, this should have little effect for new wind farm developments,

⁹³ Drankier and Roggenkamp, *North Sea Energy II Regulatory Framework: Barriers or Drivers for Offshore System Integration*: Deliverable B.1, (2019), p.35

⁹⁴ Such a scenario has previously been envisaged in the North Sea Wind Power Hub Project, involving TenneT, though a regulatory assessment of establishing a connection between an offshore electricity hub on an artificial island and the offshore grid was specifically excluded from the scope of that study, see: De Brauwe Blackstone Westbrook, *North Sea Wind Power Hub, Planning and Permitting Study in the Netherlands*, 2019, p.4.

⁹⁵ Drankier and Roggenkamp, *North Sea Energy II Regulatory Framework: Barriers or Drivers for Offshore System Integration*: Deliverable B.1, (2019), p.35; Andreasson and Roggenkamp, *Regulatory Framework: Legal Challenges and Incentives for Developing Hydrogen Offshore*, North Sea Energy 3, (2020), p.58-59.

⁹⁶ Andreasson and Roggenkamp, *Regulatory Framework: Legal Challenges and Incentives for Developing Hydrogen Offshore*, North Sea Energy 3, (2020), p.35-36.

⁹⁷ Nieuwenhout, *Legal Framework and Legal Barriers to an Offshore HVDC Electricity Grid in the North Sea*: Deliverable 7.1, PROMOTioN, 2017, p. 94; For a more detailed outline see: Andreasson and Roggenkamp, *Regulatory Framework: Legal Challenges and Incentives for Developing Hydrogen Offshore*, North Sea Energy 3, (2020), p.58.

since in recent times, zero subsidy bids have been awarded, due to favourable market conditions, although this may change in the future.⁹⁸

In 2018, the Ministry of Economic Affairs and Climate opened a consultation for an Act amending the Wind Energy at Sea Act.⁹⁹ Major revisions of the current regime for offshore wind production are envisaged, with a specific focus on broadening the concept from exclusive focus on electricity produced by wind, to energy produced by wind.¹⁰⁰ This would include any energy carrier based on the transmission of wind energy, including hydrogen which is specifically referenced in the accompanying explanatory notes.¹⁰¹ In order to facilitate this change, the current focus on a network connection to the onshore grid would be replaced by a much broader concept of a 'connection point'. Three examples of such 'connection points' are specifically referenced: (i) the connection of an electricity cable to a hydrogen facility (onshore or offshore), (ii) the connection of a hydrogen pipeline to an installation where the hydrogen is distributed over various means of transport, and (iii) the connection of a hydrogen pipeline to an installation where electricity is produced from hydrogen.¹⁰² But the amendments failed to indicate any information as to how those connections could be made, i.e. how are the cables between the offshore grid and an electrolyser/sub station located on an energy island to be defined. There is no indication whether such cables would be viewed as transmission or direct lines, or perhaps a new classification. The absence of such clarification opens a range of legal issues, including issues relating to who might legally construct or own the cable, or connect it to the offshore grid.

4.3.3 Connecting an energy island to offshore wind developments

Under the North Sea Energy program, it is anticipated that an energy island would be connected to nearby wind farms for the purposes of producing hydrogen on the island from the wind-produced electricity, as well as transporting electricity via the energy island. Under this legal regime an energy island would not be required to obtain a wind energy at sea permit, unless electricity would be produced from wind turbines placed on the island itself. As this is not envisaged in the North Sea Energy program, constructing an energy island would not be made more difficult in this regard.

⁹⁸Minister of Economic Affairs and Climate Policy, 'Ministerial Order issued by the Minister of Economic Affairs and Climate Policy on 13 December 2019, no. WJZ/19201387, containing specific rules for permitting of offshore wind energy for Hollandse Kust (noord) Wind Farm Site V (Ministerial Order for the permitting of Offshore Wind Energy Hollandse Kust (noord) Wind Farm Site V' (Ministry of Economic Affairs and Climate Policy, 2019), p.13

<<https://english.rvo.nl/sites/default/files/2019/12/Translation%20Ministerial%20Order%20for%20Permitting%20Offshore%20Wind%20Energy%20Hollandse%20Kust%20noord%20V.pdf>> accessed 20 February 2020; for further discussion on the impact of the subsidy regime on offshore power-to-gas facilities in the North Sea, see: Andreasson and Roggenkamp, *Regulatory Framework: Legal Challenges and Incentives for Developing Hydrogen Offshore*, North Sea Energy 3, (2020), p.80.

⁹⁹ Act amending the Wind Energy at Sea Act (Wijziging van de Wet windenergie op zee) of 28 November 2018.

¹⁰⁰ Art. 1(a) of the Act amending the Wind Energy at Sea Act.

¹⁰¹ Para. 2.1.2 of the Act amending the Wind Energy at Sea Act.

¹⁰² *ibid.*

Connecting an energy island to a wind farm

Problems emerge when seeking to establish the connections needed to connect an energy island to both the offshore transmission network or directly to offshore wind farms, as well as to shore. As outlined in this section, when a plot decision is taken by the Minister for Economic Affairs and Climate, the precise location and connections to the onshore grid is included. This means that when submitting a tender to obtain a wind energy at sea permit in order to construct a wind farm on that plot, establishing a connection from that wind farm to the energy island would be quite difficult. Reasons would therefore need to be provided to the Minister in order to outline the necessity of connecting the proposed wind farm to an energy island, rather than directly to the onshore grid. Additionally, if more than one applicant submits a plan which are viewed as technically and economically feasible, then the Minister will rank the different applicants on the basis of the expertise and experience of the involved parties, the quality of the design of the wind park, the capacity of the wind park, the societal costs of the farm, the quality of the risk inventory and analysis and the quality of the proposed measures to assure cost efficiency.¹⁰³

A proposal to construct an energy island will face difficulties if the plot decision taken by the Minister for Economic Affairs and Climate includes a designated connection to the onshore grid. One might argue that the terms of a plot decision could, in theory, be altered in order to accommodate the connection of an energy island to a proposed wind farm, but this would require amendments to be made by the Minister. Article 11 of the Wind Energy at Sea Act permits the amendment or revocation of a plot decision by the Minister but only if: (1) no license has been granted for the lot for three consecutive years; (2) if the basis of the plot decision is no longer considered admissible with regard to the objectives of the Wind Energy at Sea Act; or (3) if a treaty or decision of an international organization that is binding on the Netherlands compels such an amendment or revocation. It follows that the amendment of a plot decision which might not initially accommodate an energy island would be considerably difficult to amend.

Furthermore, under the terms of the Electricity Act, it is unclear whether a connection between the offshore transmission network or offshore wind farms and an energy island would be allowed. As outlined, the Wind Energy at Sea Act is due to be amended and is intended to facilitate the development of energy production activities offshore, potentially including the production of hydrogen on an energy island. However, the amendments, as issued by the Ministry of Climate and Economic Affairs fail to provide any clear details relating to the construction of a cable between an offshore wind farm and an energy island, and how such a cable would be defined.

Connecting an energy island to the onshore grid

¹⁰³Art. 24 (1-2) of the Wind Energy at Sea Act.

Even if the terms of a plot decision are changed and a tender, which includes a connection to an energy island, would be accepted, there are still considerable difficulties in securing a connection between an energy island and a wind farm. Under the current legal regime, TenneT is responsible for connecting new offshore wind farms to the onshore grid. TenneT serves not to facilitate offshore electricity supply and consumption between, for example, a wind farm and an energy island, but the function of transporting electricity from offshore to the onshore grid, including establishing the necessary connection. Due to this functioning of the offshore network, it is unlikely that it will be legally permissible to connect a platform to the offshore electricity network in order to facilitate consumption offshore.¹⁰⁴ This would, in theory, equally apply to the connection between an energy island and an offshore wind farm in order to facilitate the production of hydrogen. But if, as is foreseen in some scenarios by the North Sea Energy program, an energy island operator seeks to transmit electricity generated by an offshore wind farm and deliver it to the onshore grid, it seems that a connection between an energy island and the onshore grid must also be facilitated by TenneT. In addition, the ownership of an electrolyser, which is governed by EU law and the transpositions thereof into the national laws of Member States. The rules applicable to PtG facilities are dependent on whether the activity is classified as an electricity or gas activity.¹⁰⁵

4.4 Future developments

In 2018 the Ministry for Infrastructure and Water Management announced plans to deliver a policy framework specifically concerning the construction of artificial islands in the Dutch part of the North Sea.¹⁰⁶ Although this framework was due to be officially published in mid-2019,¹⁰⁷ the Ministry has indicated that an interdepartmental consultation process is still underway.¹⁰⁸ But while this policy framework is still due to be published, the Ministry has indicated that the construction of artificial islands will only be permitted where it involves an activity of national interest, where there is a need for it to take place at sea and where there is no reasonable alternative.¹⁰⁹

Any decision involving such a permission will be processed on a "first come, first served" basis and will account for certain factors viewed as important by the Dutch government. These are (1) the scarce space on the Dutch North Sea, (2) the permanent character that artificial islands can have, (3) the unknown effects on the

¹⁰⁴ Andreasson and Roggenkamp, *Regulatory Framework: Legal Challenges and Incentives for Developing Hydrogen Offshore*, North Sea Energy 3, (2020), p.58.

¹⁰⁵ For a more comprehensive understanding of the issue of ownership and operation of electrolysers, see: Andreasson and Roggenkamp, *Regulatory Framework: Legal Challenges and Incentives for Developing Hydrogen Offshore*, North Sea Energy 3, (2020), section 4.4.1.3.

¹⁰⁶ Kamerstuk 35000-J nr. 7 Vaststelling van de begrotingsstaat van het Deltafonds voor het jaar 2019 20-11-2018

¹⁰⁷ *ibid*

¹⁰⁸ <https://zoek.officielebekendmakingen.nl/kst-27625-472.html>

¹⁰⁹ Ministry of Infrastructure and Water Management, Policy note of 20 November 2018 (*Vaststelling van de begrotingsstaat van het Deltafonds voor het jaar 2019*), TK (*Tweede Kamer – Lower House of Parliament*) 2018-19, 35000-J No 7, para. 6.

ecosystem, and (4) any international legal obligations.¹¹⁰ These factors will, according to the Ministry, be included in an amendment to the National Water Plan as well as the provision of designated areas best suited for the construction of artificial islands in the North Sea.¹¹¹

The proposed changes should, hopefully, lead to a much clearer process for any potential developer of an energy island. Under the current regime, a proposal to construct and develop an energy island would require the obtainment of various permits. First, a permit would have to be obtained under the Water Act in order to construct an energy island and produce hydrogen thereon. A key difficulty incurred by the current water permit regime is the requirement to remove an energy island once a permit has been obtained. Under the Water Act, a detailed plan to remove an energy island would have to be included within an application, while the 10-year limit to a water permit means that an energy island would not be viewed as a permanent fixture if constructed in the North Sea. This again raises the question seen in international law in Sections 2 and 3, because 'artificial islands' are not specifically obligated to be removed by the coastal State once disused or abandoned, but cannot be specifically defined in international law.

Nevertheless, a reformed permitting system for an energy island should undoubtedly describe it as an 'artificial island' and remove any obstacles to the permanency thereof, including the potential requirements to remove as well as the 10-year permit limit. A failure to do so would essentially mean that an energy island is treated no differently than an offshore installation or structure, such as those used in the production of hydrocarbons, and could dissuade potential developers from constructing and using energy islands in the Netherlands.

Second, permits are required under the Earth Removal Act is needed in order to construct a sand-based island in the Dutch part of the North Sea and the Wind Energy at Sea Act in order to connect an offshore wind farm, an energy island and the onshore grid. Various legal obstacles seem to be present here, particularly due to the restrictiveness of the current regime with regard to 'alternative connections', that is connections other than to the onshore grid directly. Establishing a connection to an offshore wind farm seems to be more difficult than establishing a connection to the onshore grid, especially because such a connection is an 'alternative connection'. Under the Wind Energy at Sea Act, each offshore wind farm development is required to obtain a licence with strict terms as to its connection point. Therefore establishing an electricity supply would likely rely on new developments, which would include an energy island as part of its application. Moreover, under the current regime, should an offshore wind farm be connected to an energy island it would then be prohibited from receiving subsidies.

The changes evident in the amendments to the current offshore wind regime in the Netherlands, proposed in 2018, are a welcome development and should assist greatly in securing a connection between an energy

¹¹⁰ *ibid.*

¹¹¹ Kamerstuk 35000-J nr. 7 Vaststelling van de begrotingsstaat van het Deltafonds voor het jaar 2019 20-11-2018

island and future offshore wind farms, particularly in light of the specific references to alternative ‘connection points’ and the production of hydrogen from electricity in the explanatory notes. More specifically, however, changes are needed in the regime on plot decisions, particularly with regard to requirements to connect a proposed wind farm directly to the onshore grid. In this respect, changes in law must be adapted to the current system applicable to wind farms to further ensure that alternative connections, such as an energy island, are feasible alternatives.

The planned policy framework and amendments to the National Water Plan should provide greater legal certainty and clarity for potential developers of an energy island and are associated with best practice when regulating activities conducted in the North Sea. The “first come, first served” basis on which potential permits will be obtained should be seen as a welcome development, given that this non-competitive procedure is consistent with other permitting procedures currently in place for activities occurring in the North Sea. Given the wide array of permits which need to be obtained by an energy island developer, as well as the various questions which remain unanswered, one can hope that these amendments will provide adequate legal certainty to an area where there is a considerable lack thereof.

5 Conclusions

This report sought to provide a more in-depth review of the findings of the legal assessment of a sand-based energy island under Dutch jurisdiction.

Section 2 provided an overview of the rights and responsibilities of coastal States under international law. Coastal states possess various sovereign rights, actionable only when serving an economic purpose including the production of energy from the water, currents and winds. In exercising such sovereign rights, coastal states may also authorise the construction of infrastructure, such as an energy island within their EEZ for economic purposes, in so far as it does not obstruct recognised sea lanes essential to international navigation or inhibit other sea users and coastal states from their rights under the freedom of the seas. In addition, coastal states are obligated to remove 'installations and structures' which are disused or abandoned, under the premise that they pose a danger to the safety of navigation. However, 'artificial islands' are not expressly required to be removed. Hence, once an artificial island is constructed, coastal states are not expressly obligated to remove it, should it become disused or abandoned. An energy island constructed might therefore be legally required to be removed on the basis of Article 60 (3) UNCLOS, although it is unclear whether it may also be omitted, since an energy island would have to be legally defined.

Section 3 sought to provide an understanding of how an energy island would be defined legally. First an overview of the terms defined under international law was assessed, including the definitions of 'island' and 'installations, structures and artificial islands'. A key weakness identified in international law was the absence of a definition for the various forms of infrastructure referred to. Although many have attempted to distinguish an 'artificial island' from an 'installation or structure' by placing emphasis on the materials used when constructing an 'artificial island' versus those used in constructing 'installations and structures'. However, when assessing the purpose of infrastructure and the provisions in international law which refer thereto, the law seems to view an 'artificial island, installation or structure' as essentially the same, except for Article 60 (3) UNCLOS which omits 'artificial islands' from an obligation to be removed once abandoned or disused. Given the lack of clarity currently provided under UNCLOS relating to the terms 'artificial island', 'installation' and 'structure', further clarification is needed to determine what infrastructure is applicable thereto. Furthermore, with respect to Article 60 (3) UNCLOS and the obligation to remove disused infrastructure in the EEZ, it seems considerably unclear whether the Dutch state would be obligated to remove a disused energy island. However, given the absence of an adequate definition for an 'artificial island', it is unclear whether an energy island would be defined as such and whether it would be omitted from the obligation to remove once abandoned or disused.

Section 4 analysed the current regulation of offshore activities under national law in the Netherlands, which would affect the construction of an energy island within the Dutch part of the North Sea. In order to construct an energy island, a water permit would first need to be obtained. This is because the Water Act would require so due to its placement in the North Sea as well as the proposed use thereof in order to produce hydrogen, as

foreseen by the North Sea Energy program. Under the terms of the Water Act, a water permit would be required to be obtained in order to facilitate such a development and conduct such activities. Possible obstacles to the development of an energy island can be seen in the requirements to remove infrastructure once no longer in use, as well as the 10-year limits of water permits. Under the terms of the Water Act, this may be required under the terms of a water permit, although as is outlined in Section 2, it is unclear whether the Netherlands is obligated to do so under international law. Nevertheless, this leaves a potential developer of an energy island with a considerable lack of legal certainty under the current regime, which naturally presents a barrier to encourage such a development. In order to begin the construction process of an energy island, an excavation permit would also be needed under the provisions of the Earth Removal Act.

In addition, an energy island would require a connection to an offshore wind farm, which may prove difficult. Under the regulation of the Wind Energy at Sea Act, a plot decision is taken by the Minister which designates specific areas where an offshore wind farm may be built by a developer and includes a designated connection point for that plot. Should an energy island seek to be connected to a wind farm, then an amendment of the plot decision would be required. Furthermore, various obstacles under the Dutch regulation of offshore wind are present, as the current regulation provides that TenneT, as the TSO, is responsible for securing connections between the offshore transmission network, offshore wind farms and the onshore grid, under the terms of the Electricity Act. This means that if an energy island sought to be connected to an offshore wind farm then it could fall to the energy island operator themselves to secure a connection as TenneT is only responsible for connections to the onshore grid. Alternatively, should an energy island seek a connection both to an offshore wind farm and to the onshore grid for the purposes of electricity transmission, then the energy island may be seen as an extension or a part of a typical connection, although this situation remains equally unclear not least because that cable cannot be defined under the current regulations. The current situation leaves a tremendous lack of clarity for those seeking to develop a functioning energy island, although should the amendments proposed in 2018 take effect, this may aid the legal certainty required in order to successfully encourage such development. The proposed amendments to the offshore wind regime and the introduction of specific provisions regarding new forms of connection points are a welcome development, though specific details on how those connections can be realised, i.e. via cable, as well as how such cables are classified, are absent.

Furthermore, the forthcoming policy framework for artificial islands should provide some sector-specific legislation or provisions related to energy islands. Moreover, an obligation to remove an energy island, even after disuse, should be expressly omitted, as should an extension of the current term limits under the water permit regime. Such provisions would go a long way in aiding the development of an energy island in the future, while an assimilation of the permitting processes into a single permit for an energy island would greatly facilitate such development. As the precise terms of the proposed amendments have yet to be published, only time will tell whether these amendments will provide the regulatory support required by a potential energy island developer.