Kintore Hydrogen Plant

Environmental Impact Assessment Report
Chapter 17: Summary of Cumulative Effects

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Kintore Hydrogen
A STATERA COMPANY

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Summary

This document summarises the other proposed and consented development projects in the area of Kintore Hydrogen plant and the environmental effects that may arise cumulatively between Kintore Hydrogen plant and one or more of these other projects. Full details can be found in the individual topic chapters (Volume 2, Chapters 6 to 15) of this Environmental Impact Assessment Report.

1 Approach and Cumulative Developments Shortlist

1.1 Purpose of this chapter

1.1.1 This chapter of the Environmental Impact Assessment Report (EIAR) presents the summary of cumulative effects identified in the EIA for Kintore Hydrogen Plant.

1.1.2 Cumulative effects are those that result from multiple impacts on receptors occurring in combination, either at once or over time, from the proposed development together with other proposed (but not yet completed) development projects that are not included in the baseline environmental data gathered.

1.1.3 Other developments may be at the plan or policy stage, planning application stage, or may be consented or under construction. Collectively, in this section, they are referred to as 'developments' regardless of stage.

1.1.4 The methodology of the Cumulative Effects Assessment (CEA) was described in Section 3 of Chapter 4. The overall approach, as described in Chapter 4, has involved:

- establishing a potential zone of influence of the proposed development;
- a desk study of planning applications and other available sources to long-list possibly relevant other developments within the zone of influence;
- screening and shortlisting those developments with potential for cumulative effects, to take these forward for assessment;
- CEA on a topic by topic basis in Chapters 6 to 15; and
- summarising cumulative effects in this chapter.

1.1.5 Guidance from the Planning Inspectorate in England, described in Chapter 4, provides a systematic approach which has been used, including categorising other developments as either tier 1, tier 2 or tier 3 depending on the level of certainty and information available about them.

1.2 Longlisting

Information sources

1.2.1 The following data sources have been searched:

- Savills' database of development proposals;
- development projects listed on the Aberdeenshire Council planning register: https://upa.aberdeenshire.gov.uk/online-applications/search.do?action=simple&searchType=Application
- developments projects listed on the Energy Consents Unit planning register: https://www.energyconsents.scot/ApplicationSearch.aspx; and
- sites allocated for development in the Aberdeenshire Local Development Plan 2023: https://www.aberdeenshire.gov.uk/planning/plans-and-policies/ldp-2023.

1.2.2 An initial search was undertaken in September 2023 for the EIA Scoping Request. No comments on the initial cumulative developments shortlist were received through the EIA Scoping Opinion. The search has been updated in March 2024 and August 2024 in the course of carrying out the EIA and completing the EIAR.

1.2.3 The search of planning applications/permissions has focused on those with a live application (at any stage of the process, including EIA screening and pre-application discussions) or with permission granted within the last three years, as this is the typical period for expiry of a planning consent if not implemented. Earlier consented developments would be expected to be under construction or completed and to be identified through baseline studies, or their planning permission is likely to have lapsed.

1.2.4 However, where evidence such as condition discharge, variation applications or appeals within the time period searched suggests that a development applied for or consented earlier is still 'live' but not yet constructed, this has also been included in the initial long-list.

Overarching criteria

1.2.5 There are broadly two categories of development with the potential to give rise to likely significant cumulative effects:

- those that, due to their scale, location and/or nature of impact pathways, have the potential to add to the impacts of the proposed hydrogen plant development such as to cause a likely significant effect at sensitive receptors; and
- those that introduce new sensitive receptors at a location where they have the potential to experience a greater impact from the proposed hydrogen plant development (and if applicable the combined impact with another development) than existing representative sensitive receptors assessed in the EIA.

1.2.6 These overarching criteria generally exclude minor householder applications and business applications (such as building extensions or changes of use), of which there are very large numbers at any given time, unless these introduce new receptors or new

construction/land-uses outside existing developed areas that could be affected by the proposed hydrogen plant development.

1.2.7 Examples of other developments with a potentially-significant combined effect might be those requiring large-scale construction with noise or traffic impact pathways, in sufficient proximity to the proposed hydrogen plant development so as to affect the same sensitive receptors. Construction, operation and demolition phases of other developments have been considered as there may be combined effects with the proposed hydrogen plant development from different phases, for example an impact that is extended over time or a combined impact at one time, at a given sensitive receptor.

1.2.8 Examples of new sensitive receptors might be new residential properties or other landuses regarded as a sensitive for one or more EIA topics, that lie in closer proximity to the proposed hydrogen plant development than existing receptors or in an area where no existing receptors would have been assessed in the EIA, or which significantly increase the number of sensitive receptors affected at that location.

1.2.9 This does not include every potential new sensitive receptor individually, as representative receptors are typically used to determine the greatest impacts at a given location or in a given direction from the proposed development. For example, the nearest residence in a north-westerly direction from particular noise sources in the proposed development would be representative of the greatest noise impact at all residential receptors in that direction, and a new residence in the same direction but lying further away would not usually require additional cumulative effects assessment; but a new housing estate where there was previously only a single property or small number of residences might be included due to the substantial increase in number of residents affected.

Spatial extent – zone of influence

1.2.10 The initial long-listing desk study has been undertaken within a zone of influence (ZoI) based on the study area for possible landscape and visual effects, as this study area has the largest spatial extent and all other topic study areas fall within this ZoI. The landscape and visual effects study area is a 5 km radius from the main electrolysis plant development site plus 500 m from the application boundary for other elements of the proposed development if this extends beyond the 5 km area.

1.2.11 This ZoI has been used in the desk study to create an initial long-list of cumulative developments that may be relevant to the EIA overall (i.e. for one or more topic area).

1.3 Screening and shortlisting

1.3.1 The initial search within the ZoI returned a over 170 developments. The longlist was screened using the overarching criteria set out above and then further reviewed against the following criteria to provide an initial shortlist for CEA. These criteria were not exhaustive or wholly prescriptive: professional judgement by the EIA co-ordinator advised by topic specialists has also been applied throughout.

1.3.2 Shortlist inclusion criteria were as follows:

- EIA developments or those where an EIA screening or scoping request indicated the possibility of significant environmental effects was foreseen;
- ‘major developments’ where identified as such in planning application or decision;
- developments whose scale, nature or location suggests potential for particular cumulative impacts – e.g. minerals and waste projects, an industrial or combustion process as a source of air or water pollutant or noise emissions, a potential large traffic generator such as distribution warehouse or retail park, or a development in proximity to designated site or other protected asset;
- completed developments with potential operational impacts that may not be captured in baseline studies (e.g. due to very recent start of operation); and/or
- developments that introduce sensitive receptors for which the assessment of effects on existing sensitive receptors identified through baseline study and included in the assessment of a particular environmental impact would not be representative.

1.3.3 Shortlist exclusion criteria were as follows.

- evidence such as aerial photography and observations during site visits indicates that the development is completed and forms part of the existing baseline and receptors;
- an application that was refused (with no appeal pending);
- developments for which existing sensitive receptors are adequately representative for determining likely significant effects; and/or
- judgement that due to factors including distance, scale or existing context of the development, no impact pathway with the potential for significant cumulative effects with the proposed Kintore Hydrogen Plant development exists.

1.3.4 Developments not meeting the inclusion criteria and/or not considered to have potential for cumulative effects due to exclusion criteria have been screened out of the shortlist.

1.3.5 Further information has been gathered for short-listed developments from the desk study sources listed above, such as design plans and the results or proposed scope of any environmental studies where available.

1.3.6 Shortlisted cumulative developments have been categorised as Tier 1, Tier 2 or Tier 3 to describe their level of maturity, certainty over delivery, and detail of information available. These tiers are taken from Planning Inspectorate guidance referenced in Chapter 4.

1.3.7 Tier 1 developments are those with submitted applications, consents, or that are already under construction. Tier 2 developments are those at scoping stage for EIA. Tier 3 developments are those otherwise indicated as a possibility, e.g. through registered pre-application discussions with Aberdeenshire Council or the Energy Consents Unit, or those identified in Aberdeenshire Council's local development plan.

1.3.8 At tiers 2 and 3 there is typically only limited information available concerning a proposed development's design and potential environmental effects. Assessment of specific cumulative effects is therefore not always possible, but in such cases any effects that are foreseeable have been discussed qualitatively where possible.

1.3.9 The short-listed developments are detailed in Table 1.1 and illustrated in Figure 1.1.

1.3.10 The short-listed developments have been taken forward for consideration by topic specialists where sufficient environmental assessment information is available. The assessments of cumulative effects are presented in each topic chapter (Chapters 6 to 15) and are summarised in Section 2 of this chapter. Each topic assessment has applied its own ZoI and shortlisting to select those cumulative developments, from the full shortlist, which have impact pathways relevant to that topic.

Table 1.1: Shortlisted cumulative developments

ID	Planning ref.	Description	Address	Postcode	App. date	Approval	Dist. main site (m)	Dist. red line (m)	EIA?	Shortlist reason	Tier
1	APP/2022/2022	Scheme comprises formation of battery energy storage system (BESS) (49.9 megawatts), construction of substation, welfare facility, security fencing, CCTV, floodlighting, formation of access, attenuation basin and associated infrastructure.	South Leylodge Farmhouse, Kintore, Inverurie, Grampian,	AB51 0XY	30/09/2022	20/04/2023	50	0	No	Adjacent to the main site, potential cumulative visual impact, construction impacts and construction traffic on the B977	1
2	APP/2023/2310 (prev. ENQ/2023/0382)	Installation of Battery Energy Storage System (BESS) with Installed Capacity of 49.9MW, Substation and Associated Infrastructure.	Kintore Substation Kintore, Kintore, Inverurie, Grampian,	AB51 0	14/12/2023	Late August 2024	817	600	No	Potential cumulative landscape/visual impact and construction traffic on the B977	1
3	APP/2021/2903	Scheme comprises construction of workshop (class 5) and office (class 4) and formation of bus/taxi depot with SUDS. Scheme also includes translucent rooflights. This project also includes associated infrastructure works and access roads.	Land At Hill Of Cottown, Kintore, Inverurie, Grampian,	AB51 0YA	28/01/2022	13/12/2022	727	700	No	Potential cumulative landscape/visual impact to the north of the main site.	1
4	n/a	Scheme comprises of a proposed residential development for 150 units. Associated works include access roads, sewer systems, infrastructure, enabling and landscaping works. This site has been identified through the Aberdeenshire Council Housing Land Audit - (HLA).	Woodside Croft, Town Park (Gauch Hill), Inverurie, Grampian	AB51 0	n/a	n/a	2,473	935	n/a	Large residential potentially introducing additional sensitive receptors and potential possible change in landscape character from viewpoints to north east towards Kintore.	3
5	APP/2022/0651	Scheme comprises national for construction of enclosed 132kv gas insulated switchgear substation and associated infrastructure (formation of substation platform, fenced compound with cctv, siting of battery storage container, formation of access tracks, sustainable urban drainage system basin, temporary construction of compound and landscaping electricity substation comprising platform area, control building, battery storage container, associated plant and infrastructure, fencing, cctv, access tracks, sustainable urban drainage system basin and landscaping.	Land South-east Kintore Grid E, Kintore, Inverurie, Grampian	AB51 0XY	05/05/2022	12/10/2022	571	790	No	Expansion to substation adjacent to site with potential for cumulative impacts through a range of environmental pathways	1
6	APP/2020/1437	Scheme comprises national for electricity substation comprising platform area, control building, associated plant and infrastructure, ancillary facilities, landscape works and road alterations and improvement works.	Land To The West Of Kintore El, Kintore, Inverurie, Grampian	AB51 0XZ	04/08/2020	27/04/2021	274	170	No	Expansion to substation adjacent to site with potential for cumulative impacts through a range of environmental pathways	1
~~7~~	~~APP/2020/1673~~	~~Scheme comprises formation of battery energy storage compound, siting of substation, construction of boundary fencing, 4 security cameras, suds and access track (as approved by APP/2019/0373) with the addition of additional new planting on these side. This project also includes associated infrastructure works and access roads.~~	~~Fordtown, Kintore, Inverurie, Grampian~~	~~AB51 0XJ~~	~~04/09/2020~~	~~24/02/2021~~	~~1,470~~	~~1,470~~	~~No~~	*Note: this development, initially shortlisted at EIA scoping stage, has been constructed and forms part of the baseline so has not been further assessed in the CEA. The ID #7 row is retained here for continuity of reference numbering.*	~~1~~

ID	Planning ref.	Description	Address	Postcode	App. date	Approval	Dist. main site (m)	Dist. red line (m)	EIA?	Shortlist reason	Tier
8	APP/2022/0249	Scheme comprises formation of battery energy storage compound (up to 49 megawatts), siting of switch room, HV container, site office, construction of boundary fencing, 5 CCTV masts and formation of access track, including sustainable urban drainage system and parking.	Land South Of A96 East Of, West Broomhill, Kintore, Sheriffburn House, Inverurie, Grampian	AB51 0XA	17/02/2022	01/07/2022	2,443	785	No	Potential for cumulative landscape/visual impacts	1
9	APP/2023/1017 and ECU00004756	Scheme comprises construction of energy storage facility with a maximum output of 300MW.	Midmill Business Park, Tofthills Avenue, Kintore, Inverurie, Grampian	AB51 0Q	22/05/2023	n/a	3,083	1,390	No	Potential for cumulative landscape/visual impacts, construction and grid connection	1
10	APP/2022/2613	Scheme comprises construction of 4 holiday cabins, associated car parking and associated service buildings (amended layout to planning permission app/2021/1327).	Deystone, Kintore, Inverurie, Grampian	AB51	16/12/2022	14/02/2023	4,642	80	No	Adjacent to potential access for pumping station construction. Introduces additional sensitive receptors.	1
11	APP/2023/0872	Scheme comprises conditions 1 (a) siting, design, layout, external appearance, finishing materials, (b) design statement, (c) landscaping, (d) levels survey and site sections, (e) means of access, (f) car parking and turning areas, (g) footpaths to b994 and b987, including bus stops, (h) flood risk assessment, (i) details of water bodies, including method statements, (j) foul and surface water disposal, (k) waste management plan of planning permission in principle app/2017/0288 including sustainable urban drainage system. This project also includes associated infrastructure works and access roads.	Woodside Croft Midmill, Kintore, Inverurie, Grampian	AB51 0	09/06/2023	n/a	2,623	1,110	No	Large residential and potentially increases residential receptors closer to the proposed development than the south edge of Kintore (between business park and A96)	1
12	APP/2022/0283	Residential Development comprising of 600 Dwellinghouses, Neighbourhood Centre, Landscaping, Open Space and Associated Infrastructure Without Compliance with Conditions 3 (Dwellinghouse Occupation Date), 4 (Dwellinghouse Occupation until Kintore Primary School opened), 9 (Formation of Access to Supermarket consented under APP/2014/1953 to be formed), 12 (Construction in the Floodplain); and Amendments to the Wording of Conditions 1 and 2 (Timing and Content of MSC submission), 5 (Energy Statement Submission), 6 (Remediation Work Phasing), 7 (Landscaping), 8 (Archaeology), 11 (Approved Use Class of Neighbourhood Centre/Community Facilities) and 13 (Foul Sewerage Details); (Change to Condition numbering) 10 (Travel Plan Phasing), 14 (Public Transport Strategy Phasing) and 15 (Junction Improvement Works Submission) of Planning Permission Reference APP/2013/3830	Land At Kintore East Kintore Aberdeenshire	n/a	14/02/2022	25/07/23	3,552	280	No	Large residential development potentially introduces sensitive receptors closer to the water pipeline, pumping station and outfall construction and potential for cumulative construction and traffic impacts	1

ID	Planning ref.	Description	Address	Postcode	App. date	Approval	Dist. main site (m)	Dist. red line (m)	EIA?	Shortlist reason	Tier
13	n/a	Scheme comprises of a proposed residential development for 65 units. Associated works include access roads, sewer systems, infrastructure, enabling and landscaping works. This site has been identified through the Aberdeenshire Council Local Development Plan (LDP) which was adopted April 2017.	Greystone Road, Inverurie, Grampian	AB51 5	n/a	n/a	2,423	2,430	n/a	Land identified in the local plan, introduces new residential receptors	3
14	n/a	Scheme comprises of a proposed mixed development. Associated works include access roads, sewer systems, infrastructure, enabling and landscaping works. This site has been identified through the Aberdeenshire Council Local Development Plan (LDP) which was adopted April 2017.	Kintore, Inverurie, Grampian	AB51 0	n/a	n/a	2,741	1,040	n/a	Land identified in the local plan, introduces new residential receptors	3
n/a	n/a	Kintore Hydrogen has become aware of a potential forthcoming proposal for a 200 MW battery storage facility that could be located on farmland north of the proposed Kintore Hydrogen Plant above-ground installation (AGI) for the hydrogen export connection. At the time of undertaking the CEA, no specific registration of this possible project at pre-application stage or for EIA scoping with Aberdeenshire Council or the ECU has been identified, so this would fall outside the scope of CEA and no detailed development information is available. However, it has been appended to this CEA shortlist so that a qualitative assessment can be made insofar as may be possible.									n/a
n/a	n/a	Kintore Hydrogen is aware that SSEN has consulted publicly during 2023 and 2024 on route corridors for a possible 400 kV overhead line project from Tealing to Kintore, which, to connect to Kintore Substation, may run across or close to the south part of the proposed electrolysis plant site. This has been referenced in the Kintore Hydrogen Plant project description. Potential changes by SSEN to overhead lines around Kintore Substation have been accounted for in the Planning Parameters Plan, in consultation with SSEN. At the time of undertaking the CEA, no specific registration of this possible project at pre-application stage or for EIA scoping with Aberdeenshire Council or the ECU has been identified, so this would fall outside the scope of CEA, and a final route alignment for the overhead line is not confirmed by SSEN. However, it has been appended to this CEA shortlist so that a qualitative assessment can be made insofar as may be possible in the landscape and visual impact CEA.									n/a

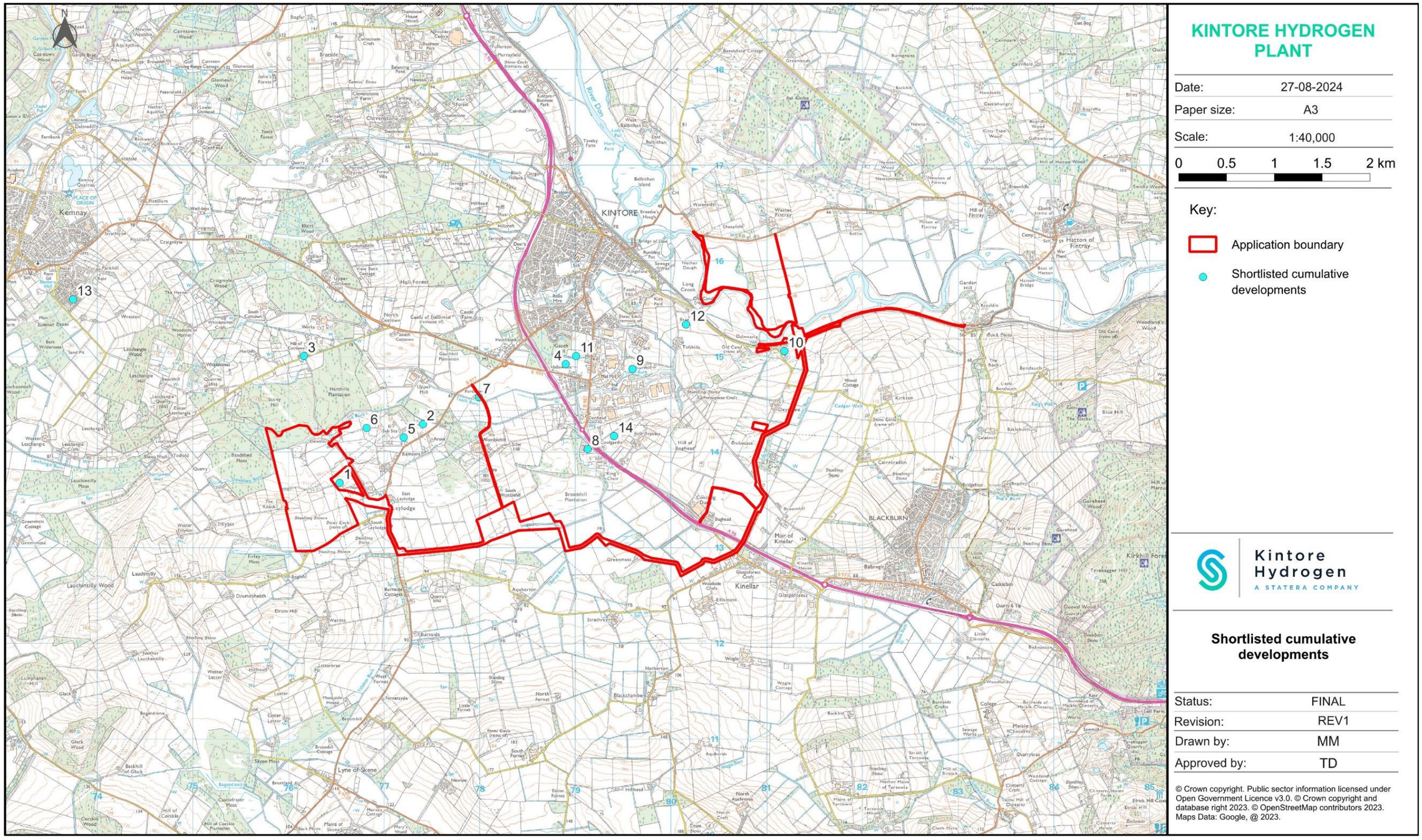

Figure 1.1: Shortlisted cumulative developments

2 Summary of CEA

2.1 Conclusions

2.1.1 As summarised in Table 2.1, for each of the identified impacts either no significant effects are concluded, or the change in impact to various receptors as a result of Kintore Hydrogen Plant together with one or more cumulative developments would not change the significance of the effect predicted.

2.1.2 Therefore, it is concluded that no further mitigation or monitoring measures are considered necessary, beyond those which have been adopted as part of each cumulative development, or were described for Kintore Hydrogen Plant in the topic chapters in Chapters 6 to 15.

2.2 Topic CEA summary

Table 2.1: Summary of cumulative effects assessment

EIA topic	Relevant cumulative developments*	Summary of cumulative effects
Landscape and visual	1, 2, 3, 5, 6, 8–10 and possible SSEN 400 kV OHL	Cumulative landscape character and cumulative visual effects on building- and route-based receptors have been assessed. The cumulative effect on local landscape character zone 1 (open undulating farmland) may slightly increase the sense of development within this landscape character area, but would be similar to that of Kintore Hydrogen Plant alone, i.e. moderate adverse (significant) within an area localised to Kintore Hydrogen Plant (plus those cumulative developments in proximity) and elsewhere minor adverse (not significant). For the relevant building-based receptors, the proposed electrolysis plant site of Kintore Hydrogen Plant may appear in views immediately adjacent, in front, and/or behind cumulative development sites in the area of Kintore Substation, albeit partially screened / filtered by vegetation, landform and built features in the local area. The cumulative developments would not affect views to the extent that they would together be greater than the visual effect rating for Kintore Hydrogen Plant alone. The same is assessed for the relevant route-based receptors. In summary, the majority of cumulative landscape effects are anticipated to remain non-significant. Localised significant cumulative landscape effects are assessed for local landscape character zone 1 (open undulating farmland), as they were for the proposed development alone in the landscape assessment, and are not considered to be significantly greater. Within the wider part of this landscape character zone, and other zones, cumulative landscape effects would not be significant. The majority of cumulative visual effects are also considered to be not significant. Significant cumulative visual effects are assessed for the three relevant building-based receptors that were assessed to experience significant effects from the proposed development alone, but not to a higher category of impact. For some other building- and route-based receptors, cumulative visual effect ratings would differ slightly to the effects reported in the visual assessment (sometimes reducing due to intervening buildings in views), but for all other visual receptors, the cumulative scenario would not change the visual context to the extent that cumulative visual effects would differ. The potential SSEN 400 kV overhead line project from Tealing to Kintore, that has been consulted on by SSEN during 2023-24 but is not yet known to be the subject of EIA scoping or a planning application, would, qualitatively, be likely to have a limited cumulative effect on landscape character (being similar to the multiple existing high voltage overhead lines connecting to Kintore Substation) but may increase cumulative visual effects for receptors near to the overhead line route, which would be for the SSEN project to mitigate. No documents or details concerning the additional possible development of a 200 MW battery storage facility are known to be available at the time of undertaking the CEA. Qualitatively, a development of this type and scale could have cumulative effects on landscape character or visual effects with Kintore Hydrogen Plant. However, without further detail of the proposal, it is not possible to make an assessment as to whether these could have the potential to be significant. It is anticipated that the battery storage plant applicant, in the course of undertaking its EIA including CEA, would identify and mitigate any significant adverse effects of the battery storage plant together with Kintore Hydrogen Plant.

EIA topic	Relevant cumulative developments*	Summary of cumulative effects
Archaeology and cultural heritage	1, 2, 5 and 6	The relevant cumulative effect pathway is the potential for a combined impact upon the settings of designated heritage assets. The cumulative effect on the settings on 'South Leylodge Steading, stone circle 110 m W of' (Scheduled Monument, SM 12350) and 'South Fornet, stone circle 250 m NW of' (SM 12353) has been assessed. The cumulative developments would not interrupt long-distance views or inter-visibility between these monuments, which have been identified as key aspects of their setting. Considering the context of the existing Kintore Substation and overhead lines, the cumulative developments are considered unlikely to considerably change the existing baseline character in views from them. The cumulative impact on cultural heritage significance is considered to be no greater than from Kintore Hydrogen Plant alone, i.e. minor adverse and not significant. No documents or details concerning the additional possible development of a 200 MW battery storage facility are known to be available at the time of undertaking the CEA. Qualitatively speaking, a development of this type and scale could have cumulative effects on the setting of designated heritage assets with Kintore Hydrogen Plant. However, without further detail of the proposal, it is not possible to make an assessment as to whether these could have the potential to be significant. It is anticipated that the battery storage plant applicant, in the course of undertaking its EIA including CEA should this proposal move forwards, would identify and mitigate any significant adverse effects of the battery storage plant together with Kintore Hydrogen Plant.
Ecology and biodiversity	1, 2, 5, 6, 10	Cumulative effects could arise via the combined effects of disturbance and habitat loss from other developments together with Kintore Hydrogen Plant, if these affect the same important ecological features (IEFs). If the construction phases of other projects are sequential with the Kintore Hydrogen Plant development, then the period these receptors are exposed to impacts may be prolonged. During the construction or operational phase projects are expected to result in increased vehicle movements and therefore cumulative impacts resulting from vehicle movements could occur. However, for all the receptors considered in Chapter 8, the magnitude of impacts from the cumulative developments are considered to be low – negligible and affecting a small area of the relative IEFs' range for combined projects. On this basis, the cumulative effects together with the proposed Kintore Hydrogen Plant are not considered likely to be of greater significance such as to alter the overall conservation status of the features.
Transport and access	1, 2, 3, 5, 6, 8, 10 and 12	Cumulative developments have been reviewed to identify those which, on the basis of published information about their traffic generation (where available), would generate trips are considered potentially significant in scale (i.e., has associated traffic impact of over 10% increase on relevant road links). This found initially that eight cumulative developments are relevant to consider. However, of these eight, five have not published a Transport Assessment, one is already completed, and two are expected to have construction complete by 2026 and not to generate a material volume of operational traffic. The remaining cumulative development is a planning permission in principle with no clear timeframe for traffic generation. On this basis, it is considered that the scenario already used in Chapter 9 to generate future baseline traffic flows, in which potential growth is accounted for within the background growth factors applied, already provides a suitably robust assessment of potential cumulative effects. This allows for a scenario whereby the potential impact of Kintore Hydrogen Plant has been considered in full and not diluted, for example, if additional trips associated with committed developments were not on the network at the time of construction or operation. No greater cumulative effects than already assessed are therefore predicted.
Noise and vibration	1, 2, 5 and 6	Cumulative developments with the potential to have noise-generating plant or activity also affecting receptors impacted by Kintore Hydrogen Plant have been assessed. Of these, three (references 1, 2 and 6) have published noise impact assessments which allow cumulative noise levels to be assessed. Others are distant, have not published noise impact assessments, or have published information indicating that the cumulative development's noise would not be significant. The noise Rating Level from the cumulative developments (individually or together) plus Kintore Hydrogen Plant at the sensitive receptors most affected by a combined noise level would be no greater than Kintore Hydrogen Plant alone, and so there would be no greater impact or significance of effect. This is due to the lower noise level of the cumulative developments at the receptors and the logarithmic nature of combined noise levels.
Air quality	1, 5 and 6	Cumulative effects arising from the impact of construction dust (should construction periods overlap) or from nitrogen dioxide emissions during operation have been assessed. The relevant cumulative developments are those within the construction dust study area for Kintore Hydrogen Plant, and of a scale to potentially be significant sources of dust, or in operation to have traffic generation that could be a source of significant nitrogen dioxide emissions. There were no point-source emitters of nitrogen dioxide identified among the cumulative developments. Kintore Hydrogen Plant's construction dust management measures (set out in the Outline Construction Environmental Management Plan) would mitigate dust emissions and include liaison with other construction sites to minimise combined dust, should work be occurring in the same area at the same time. It is expected that under normal planning controls, other major cumulative developments will also be required to apply good practice dust mitigation measures. No significant cumulative effect is therefore likely. Only one cumulative development with potentially significant traffic-source nitrogen dioxide emissions was identified, and none with point-source emissions. The impact of traffic-source air pollutant emissions from Kintore Hydrogen Plant is below the threshold for assessment, including 'growthed up' future baseline traffic flows to represent other development in the area, so no significant cumulative effect is predicted. The dispersion modelling of point-source combustion emissions from the Kintore Hydrogen Plant enclosed ground flare indicates negligible long-term impacts at all locations, and so there is no potential for a significant cumulative effect with traffic emissions from other development.
Climate change	All	All developments that emit greenhouse gases have the potential to impact the atmospheric mass of greenhouse gases as a receptor, and so may have a cumulative impact on climate change. Consequently, cumulative effects due to other specific local development projects are not predicted individually but are taken into account when considering the impact of the proposed development by defining the atmospheric mass of greenhouses gases as a high sensitivity receptor.
Soils, geology and the water environment	1, 2, 5, 6, 8, 10 and 14	All developments would be expected to be required to adopt current good practice and be managed in accordance with industry standards and relevant legislation, planning policy and guidance as controlled by the relevant planning authority and regulators (where applicable). These standards are designed to ensure, with respect to soils, geology and the water environment, that potential impacts are mitigated and controlled at source. No significant cumulative effect with Kintore Hydrogen Plant is therefore predicted.

EIA topic	Relevant cumulative developments*	Summary of cumulative effects
Population and health	Those relevant for transport, noise, air quality and socio-economic impacts	Potential cumulative effects on population and health are those that could arise through the impact pathways assessed, namely transport, noise, air quality and socio-economic impacts. In addition, potential cumulative impacts on recreation and on electric and magnetic field exposure have been assessed. As set out through the environmental pathway cumulative effect assessments summarised in this table, no significant or significantly greater cumulative effects with other developments and Kintore Hydrogen Plant are predicted, and so it is not considered that a significant cumulative effect on population and health would be caused. With respect to recreation, no significant cumulative effect is predicted due to the widespread availability of land accessible for recreation and physical activity in the area. With respect to electric and magnetic fields, there would be no cumulative exposure due to the highly localised nature of these fields.
Socio-economics	9	Cumulative construction and operational employment generation could help support firms operating in the area and provide jobs, which can sustain the capacity level of the industry (beneficial to the proposed Kintore Hydrogen Plant development) but also could limit the availability of skilled workers. Only one cumulative development project has published employment generation information to enable an assessment. Other cumulative developments are also likely to generate some employment opportunities for Aberdeenshire residents, though on varying scales, with some likely to generate few opportunities. The cumulative impact together with Kintore Hydrogen Plant is considered to remain a moderate benefit, which is significant.

** Possible 200 MW battery storage facility also included qualitatively in the assessments for each topic where relevant*