Summary of Key Indicators: Annex 2h Enclosed Farmland

Natural England's Natural Capital Indicators Project aims to identify key attributes for measuring change in natural capital in England, at a range of scales. Key indicators have been identified for the quantity, quality and location of ecosystems. We have not identified suitable repeated measures for value of benefits, which could be used as indicators.

Summary of key indicators:

See table below for further detail and related data sets

1. **Extent of habitat:** arable and rotational leys, improved grassland, permanent pasture, horticulture, orchards & top fruit and active flood plain.

2. **Quality**
   - Hydrology & geomorphology: naturalness of water levels, flooding, aquifer function, plus extent of artificial drainage and number/density of ponds.
   - Nutrient/chemical status – soil nutrient and chemical status.
   - Soil/sediment: type, moisture, carbon, peat depth and biota.
   - Species composition: naturalness of biological assemblage.
   - Vegetation: condition & extent of linear features/semi-natural habitat patches, permanent vegetation cover, plant growth rate (biomass), surface vegetation roughness, vegetation next to water bodies, pollinator food plants.
   - Cultural: nature, landscape, culture and history, quietness, accessibility.
   - Geodiversity: active geomorphological processes; condition of designated geosites.

3. **Location of:**
   - Habitats intercepting water pollution (in relation to the source, pathway and receptor).
   - Habitats and boundary features mitigating soil erosion and landslip risk.
   - Proximity to other semi-natural habitats and insect pollinated crops
   - Flood mitigating land in relation to infrastructure & settlements.
   - % population who can access a minimum of 2ha accessible green space / blue space within 2 miles of home.

4. **Ecosystem service flows** (specific to individual services):
   - Measurement of the service: production of crops, number of reared animals, amount of clean water, carbon sequestered and greenhouse gases fixed, maintenance of wildlife habitats and species, pollinator abundance, abundance of pest controlling species, intact fungal network, regulation of flooding, stabilisation of soils, water quality. Practices that relate to experiential and physical, scientific and educational use.

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The project also identifies and reviews datasets for measuring the attributes. Data sets are only included if they are regularly updated. Gaps in data are also identified, where appropriate data sets have not been found.
This note summarises the results of this project for the Broad Habitat of Enclosed Farmland, for the key ecosystem services in the table below. Please also see the separate note on the method followed.

Summary of Key Indicators: Annex 2h Enclosed Farmland

Enclosed farmland: provisioning and regulating services			Ecosystem Services * These ecosystem services are considered at a whole freshwater catchment scale										Data sources
Asset attribute	Indicator category	Indicator	Cultivated crops	Water supply *	Reared animals & outputs	Water quality *	Mass stabilisation	Flood protection *	Pollination & seed dispersal	Maintenance of nursery pops & habs	Pest & disease control	Climate regulation	
Quantity	Extent	Arable & rotational leys	X										June Agricultural Survey
Quantity	Extent	Horticulture	X										June Agricultural Survey
Quantity	Extent	Improved grassland			X								Land Cover Map
Quantity	Extent	Active flood plain						X					Water Framework Directive (WFD)
Quantity	Extent	Orchards & top fruit	X										June Agricultural Survey
Quantity	Extent	Permanent pasture					X						None identifed
Quality	Hydrology & geomorphology	Natural aquifer function recharge & discharge		X									Environment Agency: Groundwater Management Units; WFD
Quality	Hydrology & geomorphology	Naturalness of flooding regime						X					Flood Map for Planning (Rivers and Sea)
Quality	Hydrology & geomorphology	Ponds – number/density								X			Countryside Survey
Quality	Hydrology & geomorphology	Naturalness of water level regime		X		X		X					None identifed
Quality	Nutrient (& chemical) status	Soil chemical status							X				Countryside Survey; LANDIS; Geochemical Baseline Survey of the Environment;
Quality	Nutrient (& chemical) status	Soil nutrient status	X		X	X							Countryside Survey; LANDIS; Representative Soil Sampling Scheme (Rothamstead/ADAS); Agricultural Land Classification
Quality	Soil/sediment processes	Soil biota								X		X	Countryside Survey
Quality	Soil/sediment processes	Soil carbon/organic matter content				X	X					X	Countryside Survey; LANDIS; Geochemical Baseline Survey of the Environment;
Quality	Soil/sediment processes	Soil moisture	X										LANDIS: National Soil Inventory; Hydrology of Soil Types
Quality	Soil/sediment processes	Peat depth				X							None identified
Quality	Soil/sediment processes	Soil Type	X										LANDIS: National Soil Inventory; Agricultural Land Classification
Quality	Species Composition	Naturalness of biological assemblage number of trophic levels & community composition in each level								X			None identifed
Quality	Vegetation	Extent & condition of linear vegetation features and pockets of semi natural vegetation					X	X	X	X	X		Countryside Survey
Quality	Vegetation	Extent of permanent vegetation cover				X	X	X				X	None identifed
Quality	Vegetation	Vegetation next to water bodies				X		X					None identifed
Quality	Vegetation	Surface/vegetation roughness				X		X					None identifed
Quality	Vegetation	Plant growth rate	X		X								None identifed
Quality	Vegetation	Presence & frequency of pollinator larval & adult food plants							X				Countryside Survey
Spatial config.		Proximity of boundary features and semi-natural habitat patches to insect pollinator crops.							X				None identifed
Spatial config.		Distribution of habitats, in relation to water quality source-pathway-receptor				X							None identifed
Spatial config.		Distribution of flood mitigating land in relation to infrastructure & settlements						X					None identifed
Spatial config.		Distribution of habitats, other vegetation and boundary features mitigating soil erosion and landslip risk.					X						None identifed
ES flow		Abundance and species richness of pest controlling species e.g. predatory carabid beetles									X		None identifed
ES flow		Abundance, species richness & distribution of pollinators and seed dispersers							X				JNCC Status of pollinating insects; Insect pollinators Initiative Datasets
ES flow		Carbon sequestered & green house gases fixed, by soil/vegetation										X	None identifed
ES flow		Availability of water for abstraction		X									UK Government: Water Abstraction Tables; Environment Agency: Groundwater Management Units water resource availability; CEH Hydrological Summary;
ES flow		Water quality (chemical & biological, including viral & bacterial)				X							WFD; Countryside Survey; Water Quality Data Archive; Defra Environmental Statistics
ES flow		Regulation of flow regime for peak events						X					CEH Hydrological Summary; Environment Agency: Risk of Flooding from Rivers and Sea; CEH National River Flow Archive
ES flow		Intact fungal network to reduce infection of plants									X		None identifed
ES flow		Maintenance of sustainable ecosystems/life cycle stages								X			None identifed
ES flow		Number and type of reared animals			X								June Agricultural Survey; Agriculture in the UK
ES flow		Stabilisation of soils					X						
ES flow		Production of crops	X										June Agricultural Survey; Agriculture in the UK

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Enclosed Farmland: Cultural & Geodiversity Services					Data Source
Asset attribute	Indicator category	Indicator	Cultural Services	Geodiversity services	
Quantity	Extent	Arable & rotational leys	X		June Agricultural Survey
Quantity	Extent	Improved grassland	X		Land Cover Map
Quantity	Extent	Orchards & top fruit	X		June Agricultural Survey
Quantity	Extent	Permanent pasture	X		None identified
Quality	Nature	Visibility of wildlife	X		None identified
Quality	Nature	Presence of flagship species	X		None identified
Quality	Nature	Presence of rare (red list) species	X		None identified
Quality	Nature	Species diversity	X		Countryside Survey
Quality	Nature	Favourable condition of SSSIs	X		CSM (only for Sites of Special Scientific Interest)
Quality	Nature	Favourable condition of designated geosites	X	X	CSM (only for Sites of Special Scientific Interest)
Quality	Landscape, seascape & urban green space	Size of environmental space (ha)	X		None identified
Quality	Landscape, seascape & urban green space	Boundary features – type, length & condition	X		Countryside Survey
Quality	Culture & history	Designated Historic Environment Assets (World Heritage Sites, Scheduled monuments (% at risk), Historic Parks & Gardens, Listed Buildings, Conservation Area, registered battlefields)	X		Historic Environment Record
Quality	Quietness	Tranquility	X		CPRE Tranquility mapping, Defra Strategic Noise Mapping
Quality	Accessibility	Mean number of perimeter access points per km	X		None identified
Quality	Accessibility	Public Rights of Way / permissive paths; footpaths, bridleways, byway – length, density (km/ha)	X		OS master Map, Public Rights of Way
Quality	Accessibility	Presence of paths accessible to all – e.g. wheelchairs, pushchairs - length, density (km/ha)	X		None identified
Quality	Formative geological processes	Active geomorphological processes; terrestrial, coastal & marine		X	None identified
Spatial Configuration		% population who can access 2ha of green space within 2 miles of home	X		None identified
ES flow	Experiential & physical use	Number of visits	X		MENE: Monitor of Engagement with the Natural Environment
ES flow	Experiential & physical use	Duration of visits	X		MENE: Monitor of Engagement with the Natural Environment
ES flow	Experiential & physical use	Range of activities undertaken (number of people carrying out each activity, frequency, time spent)	X		MENE: Monitor of Engagement with the Natural Environment
ES flow	Scientific/educational	Number of research projects; PhD / Masters projects	X		None identified
ES flow	Scientific/educational	Number of school visits	X		None identified