

Derbyshire Natural Capital Strategy – Appendix 11

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Appendix 11: Cultural historic features and their relationship to the natural capital assets and ecosystem services

Designated status – World Heritage Site – The Derwent Valley Mills

Ecosystem Service Provided by Natural Capital		Does Asset Retain Eco-System Service or the Ability to be Affected by It	Heritage Risks and Opportunities
Provisioning Services	Food provision Areas under crop or being used to rear livestock	Yes - the buffer zone includes the 'green cradle' of the WHS– the influx of workers and their concentration in the factories within the WHS led to a necessary intensification of the land for food provision in the eighteenth and nineteenth century. This relict landscape is still appreciable as a contextual backdrop to the historic WHS community.	The landscape within the buffer zone was managed variously for industrial and arable/pastoral logistics but sometimes with reference to important views from mill owners' private residences. An appreciation of this often-fossilised landscape supports an understanding of the Outstanding Universal Value (OUV) of the WHS. Any changes to landscapes/woodlands within the WHS, its buffer zone or wider setting should consider this potential effect upon the OUV, albeit it is recognised that change does not necessarily equate to harm and can be positive. Effects upon the World Heritage Site through setting change caused by natural capital projects should be explored and understood, with harm avoided wherever possible.
	Timber Areas of woodland	Yes - parts of the WHS buffer zone are under woodland. This includes steep wooded valley sides in the north with smaller woodlands elsewhere. Some of the woodlands were exploited in the eighteenth and nineteenth century for building materials for the construction of the mills and associated buildings.	
	Water supply Water supplies for public, agricultural or industrial use	Yes - the WHS extends along the footprint of the River Derwent and has many elements associated with harnessing the power of the river for industrial use. These include mill ponds, aqueducts, culverts, weirs, leats, soughs and launders. The underground Bessalone Reservoir is also notable, built by mill owner George Henry Strutt as a clean water supply for Belper in 1895.	An appreciation of the physical supply of water provided by the Derwent and how it was engineered to provide power is fundamental to the understanding of the WHS. Any natural capital projects which affect the River Derwent and its tributaries should ensure that the effect of this on the appreciation and experience of the WHS is understood, with harm to key historic infrastructure avoided wherever possible.
	Minerals Minerals which could be exploited for human benefit	Yes - the buffer zone extends across areas of limestone with mineralised veins. Areas of sandstone are also present. Historic disused quarries represent the extraction of stone for the building of the mills and associated buildings.	The disused quarries evoke an understanding of the early industrial activity and the arrest of activity which fossilised many elements of the landscape within the WHS. Any natural capital projects which affect mineral resources within the WHS, its buffer zone or wider setting should ensure that the effect of this on the appreciation and experience of the WHS is understood, with harm to OUV avoided wherever possible.

	Fish Freshwater areas capable of providing fish for human consumption	Yes - the WHS extends along the footprint of the River Derwent.	Fisheries could take advantage of the River Derwent and its tributaries with positive outcomes for conservation through investment associated with diversification. Scheduled Monument/Listed Building Consent may be required for any physical change to statutorily designated structures within the WHS. Setting changes may also be a consideration, with careful design encouraged to negate/minimise harm to the WHS through setting change.
	Peat Peat deposits	Unlikely	No peat deposits are recorded.
Regulating Services	Carbon sequestration Areas of tree planting and vegetation which store carbon dioxide.	Yes – the WHS and the buffer zone include areas of planting and vegetation.	Removal/addition of trees/vegetation could affect important setting elements contributing towards the OUV of the WHS. Effects to the World Heritage Site through setting change caused by natural capital projects should be explored and understood, with harm avoided wherever possible.
	Air pollutant removal Areas of vegetation which help to lessen air pollution.		
	Water flow regulation Areas of vegetation which reduce rainfall flows entering rivers.		
	Noise mitigation Areas of vegetation and trees which act as a physical barrier to noise pollution.		
	Local climate regulation Areas of woodland, grassland, garden and open water which reduce air temperature in Summer.	Yes – the WHS and the buffer zone include areas of woodland, planting and open water.	As above for trees and vegetation. With regard to waterbodies, reinstating areas of open water for example through dredging of silted up lakes/canals and repairs to infrastructure could physically affect statutorily designated structures and require Scheduled Monument/Listed Building Consent. However, the positive outcome of restoring or revealing a Scheduled Monument/Listed Building and/or its intended setting within the WHS would likely be beneficial to the WHS and an appreciation of its OUV. Effects should be clearly understood with harm avoided wherever possible.
	Waste remediation Areas with the ability to act as a 'sink' for natural recycling of waste.	Yes –the buffer zone includes areas where green waste could be spread.	None anticipated with respect to affects to OUV.

Cultural Services	Recreation and tourism/Physical Health and Mental Wellbeing Publicly accessible green spaces which provide for opportunities for relaxation, exercise and the overall appreciation of nature, providing for mental health benefits and overall public wellbeing.	Yes. A visitor centre exists at the North Mill, Belper and other opportunities to experience these services are present or possible across the WHS.	Increased public access to areas within the WHS and the provision of education resources to allow for an understanding of the OUV of the WHS may afford for a greater sense of place and public wellbeing through increased opportunities to appreciate cultural services. The opening up of buildings and areas within the WHS could provide for additional opportunities for visitors and residents to be educated about and understand the history of the WHS and the areas Outstanding Universal Value.
	Volunteering Opportunities for volunteering particularly in association with charitable organisations.	Yes.	
	Education Educational benefits may be readily appreciable, particularly where assets are accessible to the public and where exhibitions and material within public displays/information boards is readily accessible and informative.	Yes.	
Bundled environmental effects	Biodiversity All animals, plants and fungi	Yes. The WHS supports a wide variety of flora and fauna.	The introduction of new species of flora and fauna is unlikely to be detrimental to the WHSs OUV as long as an appreciation of the woodlands, pasture and arable areas of the asset's 'green cradle' are not adversely affected.
	Amenity Tranquillity and recreational opportunities.	Yes.	See 'cultural services' above.
	Landscape	Yes.	See 'cultural services' above.

	Landscapes providing cultural and aesthetic benefits.		
	Soil health Soils storing carbon, filtering water and providing nutrients	Yes. The soils within the footprint of the buffer zone provide this service.	None anticipated with respect to affects to OUV.

Designated status - Scheduled Monuments

Ecosystem Service Provided by Natural Capital		Does Asset Retain Eco-System Service or the Ability to be Affected by It	Heritage Risks and Opportunities
Provisioning Services	<p>Food provision Areas under crop or being used to rear livestock within the footprint of or within the setting of a Scheduled Monument.</p>	<p>Possible. Many monuments within an agricultural/moorland setting are currently under an arable or grazing regime or within the immediate vicinity of one.</p>	<p>New arable use of a monument has the potential to disturb buried archaeological remains and would require Scheduled Monument Consent. Continued arable or horticultural activity within a monument's footprint should be undertaken in accordance with class consent (1) of the Scheduled Monuments and Archaeological Areas Act (1979). The removal of a monument from arable or horticultural use could be positive, ensuring the preservation of any remaining earthworks should they be present; for example those associated with barrows, cairns, ridge and furrow. Indirectly, arable areas and areas of rough pasture may be important setting elements which contribute towards an understanding of a monument. Changes to landscapes within the setting of a monument should consider this potential effect, albeit it is recognised that change does not necessarily equate to harm and can be positive. Effects to Scheduled Monuments through setting change should be explored and understood with harm avoided wherever possible.</p>
	<p>Timber Areas of woodland within the footprint of or within the setting of a Scheduled Monument.</p>	<p>Possible. Many monuments are located within areas under forestry and may be under tree cover themselves.</p>	<p>Removal of trees from within a monument (cut to ground level) may be positive in respect to preventing intrusive root damage to archaeological remains. New forestry within the footprint of a Scheduled Monument has the potential to disturb buried archaeological remains and would require Scheduled Monument Consent. Continued forestry activity within a monument's footprint should be undertaken in accordance with class consent (1) of the Scheduled Monuments and Archaeological Areas Act (1979). With regard to the setting of monuments, changes to vegetation could affect an understanding and appreciation of monuments topographical/functional location. Effects could be positive or negative. Planting in the setting may be detrimental if important views are adversely affected. Removal of trees in the landscape may reinstate important views – benefit the setting. Particularly sensitive asset types to tree planting/removal in terms of changes to views might be barrows, beacons cairns, chambered tombs, hill forts, henges, promontory forts. Effects to Scheduled Monuments through setting change should be explored and understood, with harm avoided wherever possible.</p>
	<p>Water supply Water supplies for public, agricultural or industrial use associated within the setting of a Scheduled Monument</p>	<p>Possible. Certain monuments may be associated with water supply infrastructure, such as dams. Other monuments of an industrial nature may rely on a water supply for their function, water being an important element of their</p>	<p>The maintenance of a water supply with an infrastructure incorporating a Scheduled Monument could affect the conservation of the monument's heritage significance. Any maintenance to waterbodies which could physically affect a scheduled monument such as a bridge or a mill would need to consider the physical effect of any works to the scheduled monument's interest with any physical change requiring scheduled monument consent. The indirect effect of any works on the setting of associated scheduled monuments should also be understood, with priority given to avoiding harm wherever possible.</p>

		setting, for example, building/mill	
	Minerals Minerals which could be exploited for human benefit within/beneath the footprint of a Scheduled Monument or within its setting	Possible. Certain monuments are directly related to past mineral extraction: Industrial – iron working/lead working/limestone	Any mineral extraction beneath or within the vicinity of a Scheduled Monument would need to carefully consider direct and indirect effects. The need for Scheduled Monument Consent would be required for disturbance within the footprint of a monument and explored for works at depth beneath a monument. Mineral extraction in the vicinity of a monument may cause change to important setting elements or may cause change which does not affect an understanding of significance. The indirect effect of any works on the setting of scheduled monuments should be understood, with harm avoided wherever possible.
	Fish Freshwater areas capable of providing fish for human consumption within a Scheduled Monument or within the setting of a Scheduled Monument	Possible. Certain monuments such as medieval fishponds historically held this natural capital and could therefore hold a modern potential. Other monuments such as those associated with rivers may have the potential to be affected by natural capital changes in relation to this service: building/mill	Fisheries could take advantage of waterbodies which incorporate scheduled monuments with positive outcomes for their conservation through investment associated with diversification. Scheduled Monument Consent would be required for any physical change to designated structures. Setting changes may also be a consideration, with careful design encouraged to avoid harm through setting change.
	Peat Peat deposits within waterlogged areas of Scheduled Monuments or within the setting of a Scheduled Monument.	Possible. Deposits of peat may be located within the footprint of monuments or their vicinity.	Peat deposits have particular archaeological potential due to their anaerobic conditions which allow for the preservation of organic matter. Disturbance to peat deposits/creation of new peat deposits within a Scheduled Monument would require Scheduled Monument Consent. The creation of any peatland in the vicinity of a Scheduled Monument may also need to consider the effect on landscape features which may be important setting elements associated with the understanding of a monument. Effects to Scheduled Monuments through setting change should be explored and understood with harm avoided wherever possible.
Regulating Services	Carbon sequestration Areas of tree planting and vegetation within the setting of a Scheduled Monument which store carbon dioxide.	Possible. Many monuments are located within areas under planting.	Removal/addition of trees/vegetation could affect important setting elements contributing towards the significance of a monument. Effects could be positive or negative. Planting of tracts of woodland could block important sight lines between contemporary monuments, monuments built in relation to earlier monuments or views of the horizon/sky that are important un understanding the ritual functionality of monuments. Conversely, the removal of trees/vegetation could reinstate lost sightlines. Particularly sensitive monuments might comprise, barrows, castles, cairns, chambered tombs, henges, beacons, hill forts . Effects to Scheduled Monuments through setting change should be explored and understood with harm avoided wherever possible.
	Air pollutant removal Areas of vegetation within the setting of a Scheduled Monument which help to lessen air pollution.		

	Water flow regulation Areas of vegetation and trees within the setting of a Scheduled Monument which reduce rainfall flows entering rivers.		
	Noise mitigation Areas of vegetation and trees which act as a physical barrier to noise pollution.		
	Local climate regulation Areas of woodland, grassland, garden and open water within the footprint of or the setting of a monument which reduce air temperature in Summer.	Possible. Many monuments are located within areas under planting or are located nearby to or directly associated with waterbodies, for example building/mill .	As above for trees and vegetation. With regard to waterbodies, reinstating areas of open water for example through dredging of silted up lakes/canals and repairs to infrastructure could physically affect designated structures and require Scheduled Monument Consent. However, the positive outcome of restoring or revealing a Scheduled Monument and/or its intended setting would likely be beneficial to the heritage resource. Effects to Scheduled Monuments through setting change should be explored and understood with harm avoided wherever possible.
	Waste remediation Areas within the footprint or setting of a Scheduled Monument with the ability to act as a 'sink' for natural recycling of waste.	Possible. Monuments within land under arable cultivation may be subject to green waste strategies.	Detrimental effects of the spreading of waste on land including Scheduled Monuments should be considered. For example, the spreading of 'green waste' is known to affect the efficacy of geophysical survey. This could result in a lack of understanding of any below ground archaeological potential associated with a Scheduled Monument.
Cultural Services	Recreation and tourism/Physical Health and Mental Wellbeing Publicly accessible green spaces within a monument or its setting which provide for opportunities for relaxation, exercise and the overall appreciation of nature, providing for mental health benefits and overall public wellbeing.	Possible. For example, monuments owned by organisations allowing for public access and appreciable monuments accessible by public rights of way	Increased public access to areas including Scheduled Monuments may afford for improved access to monuments such that their presence and function can be better understood, allowing for a greater sense of place and public wellbeing through increased opportunities to appreciate cultural services. Monuments likely to provide this service or have the potential to hold this service include castles, building manion/abbey/house/ecclesiastical/industrial/barrows/hillforts/cairns and caves . The revelation of these assets within the landscape, which natural capital projects may result in, could allow for a visual understanding of topographic advantage and important vistas, assisting in the public comprehension of the function and use of these assets and their relevance in the understanding of a place's rich historic tapestry.
	Volunteering	Possible.	

	<p>Opportunities for volunteering particularly in association with charitable organisations.</p> <p>Education Educational benefits may be readily appreciable, particularly where Scheduled Monuments are accessible to the public and where exhibitions and material within public displays/information boards is readily accessible and informative.</p>	<p>Possible. For example, monuments owned by organisations allowing for public access and appreciable monuments accessible by public rights of way</p>	
Bundled environmental effects	<p>Biodiversity All animals, plants and fungi within a Scheduled Monument or within its setting.</p>	<p>Possible. Certain monuments provide for particular flora and fauna to thrive. For example, caves may be beneficial for bats and lichens whilst industrial monuments characterised by high levels of industrial residues may be associated with specific flora.</p>	<p>Scheduled Monuments may hold specific areas of isolated natural capital due to their designation which, whilst protecting the ground from disturbance, may facilitate specific habitat types to flourish. The industrial character of certain Scheduled Monuments may also benefit certain flora such as metal tolerant plants. The introduction of new species of flora could affect the current character of Scheduled Monuments. The effect of this should be investigated and understood. The control of specific fauna may better reveal a monument or protect it from damage, for example animal burrowing. The creation of habitat/facilities to encourage the translocation of mammals from a monument may be beneficial to long term conservation of monuments. Where appropriate, effects to Scheduled Monuments should be explored and understood with harm avoided wherever possible.</p>
	<p>Amenity Tranquillity and recreational opportunities.</p>	<p>Possible. Many publicly accessible monuments allow for a particular appreciation of tranquillity which is associated with their intended function, for example building ecclesiastical. Recreational opportunities can be provided through the exploring of caves, castles and other monuments accessible to the general public,</p>	<p>See 'cultural services' above.</p>

	<p>Landscape Landscapes providing cultural and aesthetic benefits.</p>	<p>Possible. Monuments are parts of rural and urban landscapes which have the potential to provide broad benefits.</p>	<p>See 'cultural services' above.</p>
	<p>Soil health Soils storing carbon, filtering water and providing nutrients</p>	<p>Possible</p>	<p>None anticipated with respect to affects to cultural significance.</p>

Designated status – Listed Buildings

Ecosystem Service Provided by Natural Capital		Does Asset Retain Eco-System Service of the Ability to be Affected by It	Heritage Risks and Opportunities
Provisioning Services	<p>Food provision Areas under crop or being used to rear livestock in the setting of a listed building.</p>	<p>Possible. The setting of many Listed Buildings will include areas of an agricultural/pastoral character which may contribute positively towards an understanding of a building’s overall significance.</p>	<p>Arable areas and areas of rough pasture may be important setting elements which contribute towards an understanding of a listed building. Changes to landscapes within the setting of a listed building should consider this potential effect, albeit it is recognised that change does not necessarily equate to harm and can be positive. For example, farmhouses may be particularly sensitive to changes which affect an appreciation of an immediate rural backdrop comprising rough pasture and/or arable land. Similarly, country houses may be affected by changes to arable and pastoral areas should this change be detrimental to the understanding of a particular design intention referencing arable/pastoral character. Potential effects upon the significance of Listed Buildings through setting change should be explored and understood, with harm avoided wherever possible.</p>
	<p>Timber Areas of woodland in the setting of a listed building.</p>	<p>Possible. Listed Buildings may be located within woodland, on the edge of the woodland or in wider association with woodland, the woodland potentially contributing positively towards an understanding of a building’s overall significance.</p>	<p>Changes to tree planting could affect an understanding and appreciation of design intentions contributing to the significance of a vista appreciable from a listed building. Effects could be positive or negative. Country houses in-particular may be sensitive to the removal/addition of trees. Planting of tracts of woodland or scattered parkland trees could reinstate lost design intentions and be positive but could also block intended vistas and be negative. Conversely, the removal of trees could adversely affect design intentions but could also reinstate lost design intentions should areas have become overgrown with intended vistas of buildings blocked. Potential effects upon the significance of Listed Buildings through setting change should be explored and understood, with harm avoided wherever possible.</p>
	<p>Water supply Water supplies for public, agricultural or industrial use associated with a listed building or within its setting.</p>	<p>Possible. Certain Listed Buildings may be associated with water supply infrastructure, such as bridges. Other Listed Buildings of an industrial nature may rely on a water supply for their function, water being an</p>	<p>The maintenance of a water supply with an infrastructure incorporating listed buildings could affect the conservation of the listed building’s heritage significance. Any maintenance to waterbodies which could physically affect a listed building would need to consider the physical effect of any works to the listed buildings interest with any physical change requiring listed building consent. The indirect effect of any works on the setting of</p>



		important element of their setting, for example, mills .	associated listed buildings should also be understood, with consideration given to avoiding harm wherever possible.
	Minerals Minerals which could be exploited for human benefit beneath a listed building or within its setting.	Possible. Listed Buildings may be sensitive to setting change associated with mineral exploitation.	Any mineral extraction beneath or within the vicinity of a listed building would need to carefully consider direct and indirect effects. Adverse effects may occur although reinstatement could offer enhancement in the long term. Potential effects upon the significance of Listed Buildings through setting change should be explored and understood, with harm avoided wherever possible.
	Fish Freshwater areas capable of providing fish for human consumption associated with a listed building or within its setting.	Possible. Listed Buildings such as those associated with reservoirs and rivers may have the potential to be affected by natural capital changes in relation to this service: mill .	Fisheries could take advantage of waterbodies which incorporate listed buildings such as weirs , with positive outcomes for their conservation through investment associated with diversification. Listed building consent would be required for any physical change to listed structures. Setting changes may also be a consideration, with careful design encouraged to negate harm through setting change.
	Peat Peat deposits within waterlogged areas within the setting of a listed building.	Possible. Deposits of peat may be located within the setting of a Listed Building.	Deposits of peat are not likely to contribute towards the overall importance of a listed building. However, any creation of peatland would need to consider the effect on landscape features which may be important setting elements associated with specific listed buildings. Effects upon the significance of listed buildings through setting change should be explored and understood with harm avoided wherever possible.
Regulating Services	Carbon sequestration Areas of tree planting and vegetation within the setting of a listed building which store carbon dioxide.	Possible. Vegetation and planting may represent an important setting element of a Listed Building.	Removal/addition of trees/vegetation could affect an understanding and appreciation of design intentions contributing to the significance of a listed building. Effects could be positive or negative. Planting of tracts of woodland or scattered parkland trees could reinstate lost design intentions and be positive but could also block intended vistas and be negative. Conversely, the removal of trees/vegetation could adversely affect design intentions but could also reinstate lost design intentions should areas have become overgrown with intended vistas blocked. Building types most sensitive to change include country houses and churches .
	Air pollutant removal Areas of vegetation within the setting of a listed building which help to lessen air pollution.		
	Water flow regulation Areas of vegetation and trees within the setting of a listed building which reduce rainfall flows entering rivers.		
	Noise mitigation		



	Areas of vegetation and trees which act as a physical barrier to noise pollution.		
	Local climate regulation Areas of woodland, grassland, garden and open water within the setting of a listed building which reduce air temperature in Summer.	Possible. Natural capital regulating the climate may represent an important setting element of a Listed Building.	As above for trees and vegetation. With regard to waterbodies, reinstating areas of open water for example through dredging of silted up lakes/canals and repairs to infrastructure could physically affect listed structures and require listed building consent. However, the positive outcome of restoring or revealing a listed building and/or its intended setting would likely be beneficial to the heritage resource. Effects upon the significance of listed buildings through setting change should be explored and understood with harm avoided wherever possible.
	Waste remediation Areas within the setting of a listed building with the ability to act as a 'sink' for natural recycling of waste.	Possible. Land under arable cultivation within the setting of a Listed Building may be subject to green waste strategies.	None identified.
Cultural Services	Recreation and tourism, Physical Health and Mental Health Publicly accessible green spaces within the setting of a listed building which provide for opportunities for relaxation, exercise and the overall appreciation of nature, providing for mental health benefits and overall public wellbeing.	Possible. For example, Listed Buildings owned by organisations allowing for public access, for example castles, churches, country house/mansion.	Increased public access to areas including listed buildings may afford for improved access to listed buildings (at least externally) such that an assets historic, architectural and artistic interests may be better understood, allowing for a greater sense of place and public wellbeing through increased opportunities to appreciate cultural services and benefit from them.
	Volunteering Opportunities for volunteering particularly in association with charitable organisations.	Possible. For example, Listed Buildings owned by organisations allowing for public access, for example castles, churches, country house/mansion.	
	Education Educational benefits may be readily appreciable, particularly where listed buildings are open to the public and where exhibitions and material within public displays/information	Possible. For example, Listed Buildings owned by organisations allowing for public access, for example castles, churches, country house/mansion.	



	boards is readily accessible and informative.		
Bundled environmental effects	<p>Biodiversity All animals, plants and fungi within a listed building, on its fabric or within its setting.</p>	<p>Possible. Some buildings may incidentally support wildlife, for example churches (bats) or have been designed specifically for livestock – barn, stables.</p>	<p>The introduction of new species of flora and fauna may be detrimental to design intentions within the setting of a listed building. The control of specific flora and fauna may better reveal original design intentions and/or rectify past interventions ultimately detrimental to earlier phases of development. The creation of habitat/facilities to encourage the translocation of mammals from roof spaces may be beneficial to long term conservation of listed buildings. Conversely the conservation of listed buildings designed for animal habitation would provide opportunities for preservation. Where necessary, effects upon the significance of listed buildings through biodiversity changes should be explored and understood with harm avoided wherever possible.</p>
	<p>Amenity Tranquillity and recreational opportunities.</p>	<p>Possible. Many publicly accessible Listed Buildings allow for a particular appreciation of tranquillity which is associated with their intended function. For example churches, country house/mansion, garden-ornamental, statues. Recreational opportunities can be provided through boathouses, pavilions etc.</p>	<p>See 'cultural services' above.</p>
	<p>Landscape Landscapes providing cultural and aesthetic benefits.</p>	<p>Possible. Listed Buildings are parts of rural and urban landscapes which have the potential to provide broad benefits.</p>	<p>See 'cultural services' above.</p>
	<p>Soil health Soils storing carbon, filtering water and providing nutrients</p>	<p>Not Possible</p>	<p>Not applicable.</p>



Designated status – Registered Parks and Gardens

Ecosystem Service Provided by Natural Capital		Does Asset Retain Eco-System Service of the Ability to be Affected by It	Heritage Risks and Opportunities
Provisioning Services	<p>Food provision Areas under crop or being used to rear livestock.</p>	Possible	Arable cultivation may have historically been undertaken within some areas of parkland and may therefore be in keeping with historic land use, allowing for an understanding and appreciation of the arable production associated with the parkland and its manor. Similarly, areas of rough pasture are commonly present to large tracts of parkland, for the grazing of livestock. The retention of this common character type would likely be beneficial towards an understanding of historic use and character. Particular note is provided in reference to medieval ridge and furrow earthworks within parks and gardens. These commonly reference the emparkment and desertion of medieval villages in close proximity to manor houses. Effects on parkland character and earthworks through any new areas of arable cultivation should be carefully considered. Effects or changes to crop/pasture regimes should be explored and understood with harm avoided wherever possible.
	<p>Timber Areas of woodland.</p>	Possible	Removal/addition of trees could affect an understanding and appreciation of design intentions contributing to the significance of a parkland/garden. Effects could be positive or negative. Planting of tracts of woodland or scattered parkland trees could reinstate lost design intentions and be positive but could also block intended vistas and be negative. Conversely, the removal of trees could adversely affect design intentions but could also reinstate lost design intentions should areas have become overgrown with intended vistas blocked. Species considerations should also be taken into account when determining the effect on the parkland/garden. Changes to tree planting should be explored and understood with harm avoided wherever possible.
	<p>Water supply Water supplies for public, agricultural or industrial use.</p>	Possible	The maintenance of a water supply or the provision of a new supply of water affecting land within a registered park and garden or its setting could affect the conservation of its heritage significance. Any maintenance to waterbodies within a registered park and garden that contribute to a water supply should consider the physical effect of any works to historic elements of architectural or artistic interest and the indirect effect of the works on the setting of the park and garden, with



			consideration given to avoiding harm and providing for conservation and enhancement wherever possible.
	Minerals Minerals which could be exploited for human benefit.	Possible	The footprint of any mineral extraction within a registered park and garden would need to carefully consider direct and indirect effects. Adverse effects would be predicted, albeit reinstatement could offer enhancement in the long term. The effect of mineral extraction should be understood with any harm avoided where possible.
	Fish Freshwater areas capable of providing fish for human consumption.	Possible	Fisheries could take advantage of waterbodies within registered parks and gardens, with potential positive outcomes for their conservation through investment associated with diversification, albeit care would be required to minimise/negate harm to architectural/artistic elements of special interest. The effect of any change should be understood with harm avoided wherever possible.
	Peat Peat deposits within waterlogged areas.	Possible	Deposits of peat are not likely to contribute towards the overall importance of registered parks and gardens. However, any creation of peatland would need to consider the effect on park and garden features which do contribute towards the overall significance of the asset. The loss of any landscape contributing towards significance could be detrimental to the asset and would need to be understood with harm avoided wherever possible.
Regulating Services	Carbon sequestration Areas of tree planting and vegetation which store carbon dioxide.	Possible	Removal/addition of trees/vegetation could affect an understanding and appreciation of design intentions contributing to the significance of a parkland/garden. Effects could be positive or negative. Planting of tracts of woodland or scattered parkland trees could reinstate lost design intentions and be positive but could also block intended vistas and be negative. Conversely, the removal of trees/vegetation could adversely affect design intentions but could also reinstate lost design intentions should areas have become overgrown with intended vistas blocked. Species considerations should also be taken into account when determining the effect on the parkland/garden. The effect of any works on the registered park and garden should be understood with harm avoided wherever possible.
	Air pollutant removal Areas of vegetation which help to lessen air pollution.		
	Water flow regulation Areas of vegetation and trees which reduce rainfall flows entering rivers.		
	Noise mitigation Areas of vegetation and trees which act as a physical barrier to noise pollution.		
	Local climate regulation Areas of woodland, grassland, garden and open water which reduce air temperature in Summer.	Possible	As above specifically for trees and vegetation. With regard to waterbodies, reinstating areas of open water for example through dredging of silted up lakes/canals and repairs to infrastructure could restore historic design intentions. However, the creation, damming or diversion of watercourses to create new waterbodies may adversely affect design intentions. The effect of any changes on



			the overall significance of the registered park and garden would need to be understood with harm avoided wherever possible.
	<p>Waste remediation Areas with the ability to act as a 'sink' for natural recycling of waste.</p>	Possible	Detrimental effects of the spreading of waste on land within a registered park and garden should be considered. For example, the spreading of 'green waste' is known to affect the efficacy of geophysical survey. This could result in a lack of understanding of any below ground archaeological potential associated with a park and garden.
Cultural Services	<p>Recreation and tourism, Physical Health, Mental Health Publicly accessible green spaces providing opportunities for relaxation, exercise and the overall appreciation of nature, providing for mental health benefits and overall public wellbeing.</p>	Possible	Increased public access to a park and garden and/or improvements which better reveal a park and gardens historic, architectural or artistic interests could allow for a greater sense of public wellbeing through increased opportunities to appreciate cultural services.
	<p>Volunteering Opportunities for volunteering may be available within the park and garden, particularly in association with charitable organisations.</p>	Possible	
	<p>Education Educational benefits may be readily appreciable, particularly where parks and gardens are open to the public and where exhibitions and material within public displays/information boards is readily accessible and informative.</p>	Possible	
Bundled environmental effects	<p>Biodiversity All animals, plants and fungi.</p>	Possible	The introduction of new species of flora and fauna may be detrimental to design intentions. The control of specific flora and fauna may better reveal original design intentions and/or rectify past interventions ultimately detrimental to an understanding of earlier phases of development. The effect of biodiversity change should be clearly understood with harm avoided.
	<p>Amenity Tranquillity and recreational opportunities.</p>	Possible	See 'cultural services' above
	<p>Landscape</p>	Possible	See 'cultural services' above



	Landscapes providing cultural and aesthetic benefits		
	Soil health Soils storing carbon, filtering water and providing nutrients	Possible	None anticipated with respect to affects to cultural significance.



Designated status – Conservation Areas

Ecosystem Service Provided by Natural Capital		Does Asset Retain Eco-System Service of the Ability to be Affected by It	Heritage Risks and Opportunities
Provisioning Services	Food provision Areas under crop or being used to rear livestock within a Conservation Area or its setting.	Possible.	Arable areas and areas of rough pasture may be important setting elements which contribute towards an understanding of a Conservation Area. Changes to landscapes within a Conservation Area or its setting should consider this potential effect, albeit it is recognised that change does not necessarily equate to harm and can be positive. Conservation Area appraisals should be reviewed for reference to important views across, within and out of Conservation Areas. Any change should seek to preserve and enhance a Conservation Area and its setting, avoiding harm.
	Timber Areas of woodland within a Conservation Area or its setting.	Possible.	Changes to vegetation could affect an understanding and appreciation of design intentions contributing to the significance of a vista appreciable within/from a Conservation Area. Effects could be positive or negative. Planting of tracts of woodland or scattered parkland trees could reinstate lost views and be positive but could also block intended vistas and be negative. Conversely, the removal of trees could adversely affect a sense of intimacy and enclosure but could also reinstate lost views should areas have become overgrown. Any change should seek to preserve and enhance a Conservation Area and its setting, avoiding harm.
	Water supply Water supplies for public, agricultural or industrial use within a Conservation Area or its setting.	Possible.	The maintenance of a water supply or the provision of a new supply of water affecting land within a Conservation Area or its setting could affect the appearance of the Conservation Area and affect its overall significance. Any maintenance to waterbodies within a Conservation Area that contribute to a water supply should consider the physical effect of any works to historic elements of architectural or artistic interest and the indirect effect of the works on the setting of the Conservation Area, with consideration given to avoiding harm and providing for preservation and enhancement wherever possible.
	Minerals Minerals which could be exploited for human benefit beneath a Conservation Area or within its setting.	Possible.	Any mineral extraction beneath or within the vicinity of a Conservation Area would need to carefully consider direct and indirect effects. Adverse effects would be predicted, albeit reinstatement could offer enhancement in the long term.
	Fish	Possible.	Fisheries could take advantage of waterbodies within Conservation Areas with positive outcomes through investment associated with diversification, albeit



	Freshwater areas capable of providing fish for human consumption within a Conservation Area or its setting.		care would be required to ensure that changes offer enhancement to the Conservation Area.
	Peat Peat deposits within waterlogged areas within a Conservation Area or its setting.	Possible.	Deposits of peat are not likely to contribute towards the overall importance of a Conservation Area which would typically draw its significance from built form and manmade landscapes. However, in the event that the creation of peatland would affect setting elements contributing towards the importance of a Conservation Area, the significance of this effect would need to be understood.
Regulating Services	Carbon sequestration Areas of tree planting and vegetation within a Conservation Area or its setting which store carbon dioxide.	Possible.	Conservation Area appraisals should be reviewed for reference to important views across, within and out of Conservation Areas. Removal/addition of trees/vegetation could affect views within, across and out of Conservation Areas. Effects could be positive or negative. Planting of tracts of woodland or scattered trees could be positive but could also block important views. Conversely, the removal of trees/vegetation could adversely affect intentionally intimate/enclosed spaces but could also reinstate lost views should areas have become overgrown. Any change should seek to preserve and enhance a Conservation Area and its setting, avoiding harm.
	Air pollutant removal Areas of vegetation within a Conservation Area or its setting which help to lessen air pollution.		
	Water flow regulation Areas of vegetation and trees within a Conservation Area or its setting which reduce rainfall flows entering rivers.		
	Noise mitigation Areas of vegetation and trees within a Conservation Area or its setting which act as a physical barrier to noise pollution.		
	Local climate regulation Areas of woodland, grassland, garden and open water within a Conservation Area or its setting which reduce air temperature in Summer.	Possible.	As above for trees and vegetation. With regard to waterbodies, reinstating areas of open water for example through dredging of silted up lakes/canals and repairs to infrastructure could restore historic design intentions. However, the creation, damming or diversion of watercourses to create new waterbodies may adversely affect design intentions. Any change should seek to preserve and enhance a Conservation Area and its setting, avoiding harm.
Waste remediation Areas within a Conservation Area or its setting with the ability to act as a 'sink' for natural recycling of waste.	Possible.	Detrimental effects of the spreading of waste on land within a Conservation Area should be considered. For example, the spreading of 'green waste' is known to affect the efficacy of geophysical survey. This could result in a lack of understanding of any below ground archaeological potential associated with a Conservation Area.	



Cultural Services	<p>Recreation and tourism, physical and mental health Publicly accessible green spaces within a Conservation Area or its setting providing opportunities for relaxation, exercise and the overall appreciation of nature, providing for mental health benefits and overall public wellbeing.</p>	Possible.	Increased public access to areas within a Conservation Area and/or improvements which better reveal historic, architectural or artistic interests could allow for a greater sense of public wellbeing through increased opportunities to appreciate cultural services.
	<p>Volunteering Opportunities for volunteering with charitable organisations.</p>	Possible.	
	<p>Education Educational benefits may be readily appreciable, particularly where Conservation Areas include areas open to the public and where exhibitions and material within public displays/information boards is readily accessible and informative.</p>	Possible.	
Bundled environmental effects	<p>Biodiversity All animals, plants and fungi.</p>	Possible.	The introduction of new species of flora and fauna may be detrimental to design intentions within the footprint of a Conservation Area. The control of specific flora and fauna may better reveal original design intentions and/or rectify past interventions ultimately detrimental to earlier phases of development. Any change should seek to preserve and enhance a Conservation Area and its setting, avoiding harm.
	<p>Amenity Tranquillity and recreational opportunities.</p>	Possible.	See 'cultural services' above.
	<p>Landscape Landscapes providing cultural and aesthetic benefits</p>	Possible.	See 'cultural services' above.
	<p>Soil health Soils storing carbon, filtering water and providing nutrients</p>	Possible.	None anticipated with respect to affects to cultural significance.



