

Table summarising impact on Broad Oak Reservoir Concept Plan and Vision

		National Grid Options		
Objective and/Issue	Key features	Option A	Option B	Option c
Biodiversity				
Enhance woodland connectivity	Provide continuous woodland connectivity around the proposed reservoir to mitigate for any impacts associated with habitat severance and to reconnect disparate woodland blocks within the local landscape. Such landscape scale planting would benefit dormice and bats, and potentially heath fritillary butterfly.	<p>Impact: Reduced opportunity to plant a continuous belt of trees would result in loss of arboreal connectivity and reduced diversity in the structure of the proposed woodland.</p> <p>Potential mitigation: Reduce the capacity of the reservoir to allow additional planting outwith the pylon zone.</p> <p>Realign the proposed Sarre Penn diversion to avoid the pylon zone, thus enabling tree planting.</p>	<p>Impact: As per Option A</p> <p>Potential mitigation: 'Off-line' tree planting away from the Sarre Penn but outwith the pylon zone be achieved. Although this would provide continuous woodland connectivity around the reservoir, there would be a reduction in mature/full height trees along the banks of the diverted Sarre Penn; this would mean that the Sarre Penn habitats are not replaced on a like-for-like basis (the current watercourse is tree lined along most of its length within the reservoir footprint).</p>	Impact and potential mitigation are as per Option A.
Wildfowl	Provide suitable breeding and wintering habitat for wildfowl.	<p>Impact: Further work required to assess potential impacts of cables to wildfowl. Potential issues with bird strike, potential reduction in available flyways/approaches onto the reservoir for birds, and/or potential reduction in suitability of reservoir for wildfowl</p> <p>Potential mitigation: Mitigation options could include the installation of high visibility 'balls' onto cables within the vicinity of important bird flyways, although this would have landscape implications.</p>	Impacts and mitigation as per Option A.	Impacts and mitigation as per Option A.
Bats	Provide continuous woodland connectivity around the proposed reservoir and habitats that would be suitable for roosting, foraging and commuting bats.	<p>Impact: Further work needed to assess whether electricity pylons affect bat behaviour. Potential reduction in suitability of habitat for foraging and commuting bats.</p> <p>Potential mitigation: Reduce the capacity of the reservoir to allow additional planting outwith the pylon zone.</p> <p>Realign the proposed Sarre Penn diversion to avoid the pylon zone, thus enabling tree planting.</p>	Impacts and mitigation as per Option A.	Impacts and mitigation as per Option A.
Sarre Penn diversion	Replace loss of riparian habitats on a like-for-like basis.	<p>Impact: reduced tree planting in pylon zones means that like-for-like habitat replacement cannot be achieved.</p> <p>Potential mitigation: Reduce the capacity of the reservoir to allow additional planting outwith the pylon zone.</p>	Impacts and mitigation as per Option A.	Impacts and mitigation as per Option A.

		Realign the proposed Sarre Penn diversion to avoid the pylon zone, thus enabling tree planting.		
Landscape character/Visual				
Visual and landscape impacts common to all four Options		Impact: Significant adverse visual impact on views from the north, west and east and parts of the southern shoreline. Mitigation: Underground routing Impact: Significant adverse impact on landscape character. Cumulative impact when considered in context of existing infrastructure encircling proposed reservoir. Mitigation: Underground routing. Impact: The lines and towers will have a fragmenting effect on the landscape proposals due to the constraints on the size and management of planting within and adjacent to the route corridor. Mitigation: It might be possible to reduce the visual impact of discontinuity through careful design and avoiding the creation of narrow corridors.		
Management and maintenance impacts common to all four options		Impact: Management of shrub planting under power lines – increased monitoring and management requirements. Mitigation: Where appropriate, without compromise to overall landscape aims and objectives, consider grass as an alternative finish beneath power lines Impact: Access required for inspection and maintenance of power lines – may compromise landscape aims and objectives and increase fragmentation of habitat. Mitigation: Reduce number of towers		
Visual and landscape impacts arising from towers		Impact: Three pylons including two bulkier deviation towers. Mitigation: Reduce the number of towers and reduce the number of changes in direction. Tower PC9 Impact: Bulky deviation tower located on visually prominent peninsula. Mitigation: Screening not possible due to prominent location and constraints on the size of tree planting in close proximity to pylons and lines. (Likely that adjacent existing vegetation will need to be removed.) Might be possible to provide wooded backdrop by inter-planting existing orchard with high canopy woodland, although the top half of tower still likely to be visible against skyline.	Impact: Four pylons including one bulkier deviation tower. Mitigation: Reduce the number of towers. Tower PC10 Impact: Located on same alignment as dam and will be focal point in views from north along dam crest Mitigation: Move alignment slightly further south to retain as much existing vegetation as possible. Consider changing proposed coppice woodland to high canopy woodland to provide wooded backdrop. Tower PC9 Impact: Located immediately adjacent to diverted watercourse in visually prominent location. Mitigation: Move alignment slightly further south to allow for, as a minimum shrub planting, at the base of the tower.	Impact: Three pylons including two bulkier deviation towers that have a greater visual impact than suspension towers. Mitigation: Reduce the number of towers and reduce the number of changes in direction. Tower PC9 Impact: Bulky deviation tower located on visually prominent peninsula. Mitigation: Retain as much of the existing mature vegetation at this location as possible. (Most likely to be lost as easement.) Consider planting high canopy woodland to the north of the pylon to help screen the base of the pylon in the long term. Might be possible to provide wooded backdrop by inter-planting existing orchard with high canopy woodland, although top half of tower still likely to be visible against skyline. Tower PC9 Impact: May prevent or reduce the scope for providing widened reservoir margin. Mitigation: Change shoreline profile by extending into reservoir.
Visual and landscape impacts arising from power lines		Lines between PC9 and PC10 Impact: Cross the reservoir dam/existing ground interface and stream diversion at right angles to the dam increasing their visibility in views from the north.	Lines between PC9 and PC10 Impact: Lines follow and cross the diverted watercourse at two locations within close proximity reducing scope for creation of suitable riparian habitats along significant length of watercourse.	Lines between PC9 and PC10 Impact: located directly on left bank of diverted watercourse reducing scope for creation of suitable riparian habitat and integration of proposed bridge structure at this location. Might also be issues related

		<p>Mitigation: Might be possible to reduce the visibility of the lines by changing the proposed coppice woodland to high canopy woodland so the lines are seen in part, against a wooded backdrop - in the long term.</p> <p>Lines between PC9 and PC10 Impact: Cross the reservoir dam/existing ground interface and stream diversion at right angles to the dam increasing their visibility and placing a constraint on planting required to integrate the dam and diverted stream into the landscape. Mitigation: Might be possible to achieve satisfactory integration with shrub planting, depending on overhead clearance.</p> <p>Lines between PC8 and PC9 Impact: Likely that a significant proportion of and existing belt of visually trees will be lost to provide suitable easement for the power lines. Mitigation: Not possible.</p> <p>Lines between PC8 and PC9 Impact: The lines cross the diverted watercourse at an oblique orientation thereby increasing the area where suitable riparian planting will be precluded by NG easements. Mitigation: Not possible. If retained on Option A alignment, would need assurance from NG that shrub planting would be acceptable, as a minimum, under power lines to afford some continuity.</p>	<p>Mitigation: Move alignment slightly further south to avoid crossing watercourse. If retained on Option B alignment, would need assurance from NG that shrub planting would be acceptable, as a minimum, under power lines to afford some continuity.</p>	<p>to integration of watercourse where it changes gradient.</p>
Recreation				
Recreational impacts common to all four options		<p>Impact: Visual clutter and noise from overhead power-lines diminishing desired visitor experience. Mitigation: Underground routing.</p> <p>Impact: Management and maintenance of power lines – increased visual and noise disturbance in quiet rural habitat. Mitigation: Reduce number of towers and located on edge of site rather than within.</p>		
Recreational impacts arising from power lines		<p>Lines between PC9 and PC10 Impact: Located directly overhead on the gateway to the site for visitors, providing for a significant detractor from the desired experience to a countryside visitor attraction. Mitigation: Not possible as the location of the footpaths/access tracks is dictated by the location of the dam and diverted stream. Some improvement might be gained by meandering the track to provide oblique views, subject to still providing for vehicle access.</p>	<p>Impact: Lines between PC9 and PC 10 directly over proposed footpath – visual intrusion and noise diminishing visitor experience. Mitigation: Consider moving footpath/track onto left bank of diverted stream, providing two crossing points to avoid footpath being under pylon.</p>	<p>Impact: Footpath located immediately adjacent to/under tower PC9. Mitigation: Change footpath alignment – diminishment of visitor experience.</p> <p>Lines between PC9 and PC10 Impact: Located directly overhead on the gateway to the site for visitors, providing for a significant detractor from the desired experience to a countryside visitor attraction. Mitigation: Not possible as the location of the</p>

		<p>Lines between PC8 and PC 9</p> <p>Impact: Lines cross over the reservoir waterbody and perimeter footpath at two locations within close proximity to each other where the design intent was for there to be a quiet bay. The visitor experience will be detrimentally affected.</p> <p>Mitigation: Not possible due to location.</p>		<p>footpaths/access tracks is dictated by the location of the dam and diverted stream. Some improvement might be gained by meandering the track to provide oblique views, subject to still providing for vehicle access.</p>
Engineering				
Construction				
Embankment	<p>During construction of the main embankment it is likely that large plant will be used.</p>	<p>Impact: A proportion of construction will have to be done under 'goal posts'. This will lead to an increase in construction time and costs due to reduced construction efficiency.</p> <p>Potential mitigation: not possible</p>		
Stream diversion	<p>Construction of the stream diversion channel</p>	<p>Impact: A proportion of construction will have to be done under 'goal posts'. This will lead to an increase in construction time and costs due to reduced construction efficiency.</p> <p>Potential mitigation: minor changes to stream diversion route to minimise amount of construction under pylons. This will most likely lead to increased costs due to additional land forming required to change stream route.</p>	<p>Impacts and mitigation as per Option A.</p>	<p>Impacts and mitigation as per Option A.</p>
Stream diversion and other excavations	<p>Due to uncertainty in the ground conditions and levels the stream diversion may undergo changes in detailed design. The stream diversion is also dependent on embankment crest level, if this is changed in detailed design the stream diversion is likely to require alterations.</p>	<p>Impact: once the pylons are placed future changes to the stream diversion route may not be possible due to physical restrictions and/or slope stability.</p> <p>Potential mitigation: Design and construction of pylons should be after detailed design of the reservoir, this will allow for more accurate levels and the stream diversion route to be confirmed.</p> <p>Or</p> <p>Pylons are sufficiently clear of the stream diversion route to allow for design flexibility with regard to the stream diversion.</p>	<p>Impacts and mitigation as per Option A.</p>	<p>Impacts and mitigation as per Option A.</p>
Haul routes	<p>The main haul routes for the construction of the reservoir are likely to be from the east of the reservoir to avoid Tyler hill.</p>	<p>Impact: haul routes may need to be changed from the east to from the west, this would increase construction traffic through Tyler Hill.</p> <p>Potential mitigation: N/A</p>		<p>Impacts and mitigation as per Option A.</p>
Rising main and outlet pipeline	<p>Rising main pipeline to supply the reservoir from Plucks Gutter.</p> <p>Outlet pipeline to deliver water from the</p>	<p>Impact: lengths of both pipelines will need to be constructed under the pylons using 'goal posts'.</p> <p>Potential mitigation: changes in the pipeline</p>	<p>Impacts and mitigation as per Option A.</p>	<p>Impacts and mitigation as per Option A.</p>

	water treatment works to the Blean service reservoir.	route to minimise the length under pylons. Altered pipeline routes may reduce hydraulic efficiency or encroach on other aspects of the reservoir. Or Allow for a longer construction time/cost for this aspect of the reservoir.		
Cranes/elevated plant	There is likely to be a range of elevated plant requires for the construction of the reservoir.	Impact: restricted use of cranes and other elevated plant due to height restrictions caused by pylons. Potential mitigation: use plant of an appropriate maximum size or have different sized plant for different construction areas.	Impacts and mitigation as per Option A.	Impacts and mitigation as per Option A.
Maintenance				
Emergency access	Emergency access to the reservoir embankments and controls	Impact: Emergency access height restrictions under pylons Potential mitigation: additional emergency access route from the north of the dam, this will lead to a reduction in the amount of planting.		Impacts and mitigation as per Option A.
Clearing of stream diversion	Basic ongoing maintenance to keep the stream diversion clear of debris.	Impact: The stream diversion may need additional clearing during the period of maintaining the pylon easement caused by debris entering the stream. Potential mitigation: N/A	Impacts and mitigation as per Option A.	Impacts and mitigation as per Option A.
Overall implications & costs				