

10. Population and health

10.1. Introduction

This chapter considers the potential effects of the Proposed Scheme on recreational assets and agricultural land holdings during construction and operation.

10.2. Regulation and policy background

There is no specific legislation relevant to this topic area. Although the Proposed Scheme is permitted development, national and local planning policy supports the continuation and improvement of outdoor recreational facilities including areas of open space and PRowS.

10.3. Methodology

10.3.1. Scope

The scoping assessment carried out at the formal scoping stage was documented in the PEIR for the Proposed Scheme and has since been reviewed before undertaking this assessment. The topics scoped in and out of this assessment are outlined in Table 10.1 below.

Table 10.1 Scope of assessment

Scoped in	Scoped out
Land take during construction and operation.	Impacts on local economy due to construction and operation.
Changes in agricultural practices during construction and operation.	Health impacts associated with noise/air quality and pedestrian/cyclist access and amenity during construction and operation.
Construction impacts on recreation and amenity users of the PRow and long-distance footpaths.	Health impacts associated with access to greenspace/PRow during construction and operation.
Operational impacts on recreation and amenity users of the PRow and long-distance footpaths.	

10.3.2. Study area

The study area for this assessment is outlined in Figure 10.1 in Appendix A. The study area comprises of the construction footprint and the settlements of Langport, Stathe, Sutton Mallett, Pathe, Othery, Middlezoy, Westonzoyland, Chedzoy, Parchey and Stawell which are deemed to be the most sensitive settlements due to their proximity to the Proposed Scheme and the use of some haulage routes through these settlements during the construction phase.

10.3.3. Guidance

For the purposes of this assessment, the baseline data was gathered as a desk-top study using publicly available information from a range of online resources including:

- Sedgemoor District Council’s planning policies and associated documents
- South Somerset District Council planning policies and associated documents
- The Somerset Levels and Moor Flood Action Plan 2014
- The ‘Multi-Agency Geographic Information for the Countryside’ (MAGIC) website
- The 1:250,000 Series Agricultural Land Classification Mapping for South West England 2010 (Natural England)

10.3.4. Determination of significance

There is no recognised methodology for assessing the impacts of a scheme on population and health and therefore the broad assessment of impacts on population receptors follows the broad assessment methodology outlined in Tables 10.2 and 10.3 below based on professional judgement. The significance of effects is determined using value and magnitude using the matrix provided in Figure 5.1 (p44) of Chapter 5. Significant effects are those which are assessed at moderate or above.

Table 10.2 Criteria for assessing the value (sensitivity) of population receptors

Value	Receptor	Criteria
High	Agricultural land holdings	Areas of land which are detrimental for agricultural use and productivity and cannot be replicated within alternative agricultural land (if available). Access between neighbouring land parcels and surrounding land is required on a daily basis often with very high levels of vehicular movements.
	Recreation and amenity users	Footpaths and routes likely to be used for recreational users on a daily basis with no alternative routes likely within the surrounding or wider area. Recreational activities which are highly specific to the area with little or no substitution within the surrounding or wider area.
Medium	Agricultural land holdings	Areas of land which mostly provide important opportunities for agricultural use and productivity. Access between neighbouring land parcels and surrounding land is required on a frequent basis (daily/weekly).
	Recreation and amenity users	Footpaths and routes likely to be used by recreational users on a daily basis but with alternative routes available within the surrounding and wider area. Recreational activities which are frequently undertaken (daily/weekly) within the area, but for

Value	Receptor	Criteria
		which can also be undertaken within the surrounding and wider area.
Low	Agricultural land holdings	Areas of land which provide minimal value for agricultural use and productivity. Access between neighbouring land parcels and surrounding land is required on an infrequent basis (monthly).
	Recreation and amenity users	Footpaths and routes which are not likely to be used by recreational users due to severance issues or due to a lack of connectivity to recreational activities/amenities. Recreational activities which are infrequently undertaken (monthly) within the area, but for which can also be undertaken within the wider area.
Negligible	Agricultural land holdings	Areas of land which are predominantly not used for agricultural purposes or are of very low agricultural value. Access between neighbouring land parcels and surrounding land is required on a highly infrequent basis (monthly/bi-monthly).
	Recreation and amenity users	No footpaths or routes available for recreational users within the local or surrounding area. No recreational activities available within the local or wider surrounding area.

Table 10.3 Criteria for assessing the magnitude of population receptors

Magnitude of impact (change)	Receptor	Criteria
High	Agricultural land holdings	Severe damage or loss to agricultural land/access, thereby significantly reducing productivity and the overall viability of the business (adverse). Substantial improvements to agricultural land, thereby potentially significantly enhancing productivity (beneficial).
	Recreation and amenity users	Routes used by recreational users likely to be significantly severed or become completely inaccessible. Recreational activities likely to cease entirely (adverse). Existing routes used by recreational users likely to be significantly enhanced, with potential new routes leading to enhanced connectivity to the local and wider area. Existing recreational

Magnitude of impact (change)	Receptor	Criteria
		activities likely to be enhanced, often with new recreational activities made available (beneficial).
Medium	Agricultural land holdings	<p>Partial damage or loss to agricultural land/access, thereby partially comprising productivity and the overall viability of the business (adverse).</p> <p>Some moderate improvements to agricultural land/access, potentially enhancing productivity (beneficial).</p>
	Recreation and amenity users	<p>Routes used by recreational users likely to be partially severed or become less accessible. Some recreational activities likely to cease or become difficult to undertake on a frequent basis (adverse).</p> <p>Existing footpaths and routes used by recreational users likely to be improved, with the opportunity to create new routes leading to enhanced connectivity within the local area. Existing recreational activities likely to be enhanced (beneficial).</p>
Low	Agricultural land holdings	<p>Minor damage or loss to agricultural land/access, thereby resulting in changes which do not compromise the overall viability of productivity or the overall business (adverse).</p> <p>Some minor improvements to agricultural land/access, potentially enhancing productivity and the viability of the overall business (beneficial).</p>
	Recreation and amenity users	<p>Some minor routes used by recreational users likely to become less accessible. Some minor recreational activities likely to cease or become difficult to undertake on an infrequent basis (adverse).</p> <p>Existing footpaths and routes used by recreational users likely to be improved. Existing recreational activities likely to be minimally enhanced (beneficial).</p>
Negligible	Agricultural land holdings	<p>Very minor damage or loss to agricultural land/access, thereby resulting in changes which do not compromise the overall viability of productivity or the overall business (adverse).</p> <p>Some very minor improvements to agricultural land/access, potentially enhancing productivity</p>

Magnitude of impact (change)	Receptor	Criteria
		and the viability of the overall business (beneficial).
	Recreation and amenity users	Some very minor routes used by recreational users likely to become less accessible. Some very minor recreational activities likely to cease or become difficult to undertake on an infrequent basis (adverse). Some existing minor footpaths and routes used by recreational users likely to be minimally improved. Some existing recreational activities likely to be minimally enhanced (beneficial).

10.3.5. Limitations

The assessment of effects on population and human health has been undertaken as a desk-based assessment only using publicly available information sources. No site visit has been undertaken, although the assessment has been informed by the extensive knowledge of the site by the wider project team. Given the nature of the site and the scale of the project this approach has been considered proportionate for the assessment of effects on population and human health.

10.4. Existing environment

10.4.1. Socio-economic factors

The study area is located within a semi-rural setting with the fringes of the settlements of Langport, Stathe, Sutton Mallett, Pathe, Othery, Middlezoy, Westonzoyland, Chedzoy, Parchey and Stawell located within the immediate and wider vicinity (see Figure 10.1, Appendix A). The study area is located within the administrative boundaries of South Somerset District Council and Sedgemoor District Council and immediately adjacent to the boundary of Somerset West and Taunton Council. The population living within the district of Sedgemoor is 116,104 (2011 Census) and the population living within the district of South Somerset is 163,277 (2011 Census).

The Sowy passes within approximately 500m of numerous farms and residential properties including Bakers Farm, Chapel Farm, Duck Cottage, Grove Farm, Hancox Farm, Rose Cottage, Little Ham Farm, Aller Court Farm, Oath Farm, Sedgemoor House, Stathe House, Pathe House, Mill Farm, Milton Farm, Bagenham Farm, Bennett's Farm, Shride Farm, Owery Farm, Greylake Farm, Merricks Farm Cottage and Manor Farm. The KSD passes within approximately 500m of East Field Farm, Beech Tree Farm, Beerway Farm, Burdenham Farm, Oakfield Barn, Liney House Farm, Nino's Dairy Farm, Sibley's Farm and Penwood Farm.

Within the settlements of Chedzoy, Othery, Middlezoy and Westonzoyland are various community facilities including convenience stores, bakeries, village halls, churches, primary and secondary schools, care homes and public houses. The South Somerset Local Plan 2006-2028 states that 'Farming employs a small proportion of the South Somerset workforce and employee numbers have steadily

declined over the years, from approximately 3,189 jobs in 2007 to 3,035 jobs in 2010 (a reduction of 5%). Farming and its associated businesses remain integral to the present and future of South Somerset. Food security, local produce and reducing 'food-miles' remain nationally important, and an increasing onus on a low carbon economy, will provide opportunities for key sectors such as land-based industries and renewable energy'.

The county has varied and complex soils that support a wide range of farming, from intensive cropping (potatoes) and dairying but elsewhere only support extensive grassland systems for beef and sheep (The Somerset Levels and Moors Flood Action Plan, 2014).

Within the study area (and progressing downstream) soils consist of loamy and clayey floodplain soils with naturally high groundwater (National Soil Map of England and Wales, 2013). It includes lightly acid loamy and clayey soils with impeded drainage, very acid loamy upland soils with a wet peaty surface and loamy and clayey soils of coastal flats with naturally high groundwater

Recreation and amenity

The study area is used for a range of recreational activities, such as walking, bird watching and fishing (the KSD is leased to Bridgwater Angling Association). In addition, there are numerous PRowS (footpaths, bridleways and restricted byways) within the study area used by the local community and recreational users. PRowS located within the study area are shown on Figure 10.1 in Appendix A and outlined below in Table 10.4.

Table 10.4 PRowS located within the study area

Location of PRowS	PRowS Reference
Within and immediately adjacent to the construction footprint	40UC017 BW 8/6, 40UC017 BW 8/25, 40UC017 BW 8/20, 40UC052 BW 36/5, 40UC045 BW 31/16, 40UC052 BW 36/8, 40UD003 L 1/8, 40UD003 L 1/1, 40UD003 L 1/3, 40UD003 L 1/11 and 40UD003 L 1/12.
Immediately adjacent to proposed haulage routes	40UC033 BW 20/14, 40UC033 BW 20/31, 40UC033 BW 20/32, 40UC033 BW 20/33, 40UC033 BW 20/11, 40UC033 BW 20/21, 40UC037 BW 24/7, 40UD003 L 1/1, 40UD003 L 1/2, 40UD003 L 1/3, 40UD003 L 1/4, L 1/2, 40UD003 L 1/14, 40UD003 L 1/15, 40UD003 L 1/7 and 40UD003 L 1/9.
Within the settlement of Chedzoy	40UC017 BW 8/16, 40UC017 BW 8/18, 40UC017 BW 8/7, 40UC017 BW 8/12, 40UC017 BW 8/19, 40UC017 BW 8/2, 40UC017 BW 8/15, 40UC017 BW 8/1, 40UC017 BW 8/5, 40UC017 BW 8/11 and 40UC017 BW 8/23.
Within the settlements of Stawell and Sutton Mallet	40UC045 BW 31/8, 40UC045 BW 31/12, 40UC045 BW 31/11/1 and 40UC045 BW 31/11

Location of PRoW	PRoW Reference
Within the settlement of Westonzoyland	40UC052 BW 36/2, 40UC052 BW 36/4, 40UC052 BW 36/6 and 40UC052 BW 36/1.
Within the settlements of Middlezoy, Othery and Pathe	40UC033 BW 20/30, 40UC033 BW 20/3, 40UC033 BW 20/18, 40UC033 BW 20/1, 40UC033 BW 20/5, 40UC037 BW 24/4, 40UC037 BW 24/3 and 40UC037 BW 24/2.
Within the settlements of Aller, Stathe, Oath and Langport	40UE008 T 25/29, 40UE008 T 25/1, 40UE008 T 25/2 and 40UE008 T 25/29.

The Parrett Trail, a long-distance footpath runs between the Parrett and the Sowy between the settlements of Langport and Stathe (see LMP, Appendix I). In addition, The Macmillan Way West is a long-distance footpath which runs for 164km from Castle Cary in Somerset to Barnstaple in Devon. Within the study area, the Macmillan Way West runs from the settlement of Langport to a point near the settlement of Westonzoyland where the route coincides with the Parrett Trail.

10.5. Likely significant effects

10.5.1. Socio-economic (agricultural holdings)

Construction

The Proposed Scheme is likely to result in temporary adverse impacts to agricultural practices from disturbance activities including use of machinery, delivery of materials, use of farm access tracks, use of agricultural land for construction activities and associated noise as a result of construction activities. In addition, bank raising works are likely to require farmers to temporarily adopt their farming practices during the construction phase such as rotating livestock into different land parcels on a more regular basis and ensuring livestock have available drinking water if livestock were previously dependent on water within the KSD/Sowy channels. Therefore, these construction activities are likely to result in minor adverse (not significant) impacts on agricultural practices during the construction phase based on a low magnitude and a medium value receptor.

The Proposed Scheme will involve a small degree of permanent land take (estimated to be between 5-10m from the KSD/Sowy channels to the back slope of the raised bank) from agricultural holdings located immediately adjacent to the KSD/Sowy channels, predominantly from bank raising works. Farmstead properties to be most impacted by bank raising works are located on the left bank of the KSD between the settlements of Parchey and Westonzoyland, properties situated at the confluence of the KSD and the Sowy, the left bank of the Sowy between the settlements of Westonzoyland and Othery and between Monk's Leaze Clyce and Beer Wall. With only minimal permanent land take required for the bank raising works and no land ownership lost as a result of these works, the Proposed Scheme is likely to result in minor adverse (not significant) impacts on agricultural practices based on a low magnitude and a medium value receptor.

Land parcels located within the construction footprint on the left bank of the KSD and the Sowy will be fenced off for up to two years to allow grassland areas to re-

establish. Fencing will therefore act as a barrier for livestock to obtain drinking water from the KSD/Sowy channels and potentially change some agricultural practices during this period. Therefore, these construction activities are likely to result in minor adverse (not significant) impacts on agricultural practices during the construction phase based on a low magnitude and a medium value receptor.

Operation

Once the Proposed Scheme is operational, the frequency of overtopping of banks along the KSD and Sowy within the scheme extents is likely to reduce (although no specific hydraulic modelling for the Phase 1 scheme in isolation has been undertaken) and the Proposed Scheme will contribute towards the flood risk benefits achieved through the full River Sowy and King's Sedgemoor Drain Enhancements Scheme once implemented, in combination with other measures included within the 20 year Flood Action Plan.

Once the full River Sowy and King's Sedgemoor Drain Enhancements Scheme is implemented, the operational procedures for Monk's Leaze Clyce altered to allow more water to be diverted from the Parrett to the Sowy/KSD system when required. There is potential that some areas may experience a slight increase in flood extents as a consequence of the altered operational procedure. These areas include land directly adjacent to the Lower Sowy and the KSD, on the left bank of the KSD between the confluence with the Sowy and the A361, and also in the Lang Moor and Sutton Hams areas may experience a slight increase in flood extents on those occasions when water levels in the Sowy and KSD are sufficient to over top the raised flood embankments. In most areas the increase in flood extent will be associated with raised water levels within the Sowy and KSD impeding drainage from the Sowy, with the exception of the land within the area on the left bank of the Lower Sowy upstream of the confluence and downstream of the A361 (outside of the Proposed Scheme extents) where bank raising is not proposed.

Water levels are very carefully controlled across the Somerset Levels and Moors, and existing water control management procedures provide a mechanism to mitigate any adverse effects realised from these potential slight increases in flood extents. Alternatively, there may be an opportunity for interested landowners to take benefit from their ability to contribute to natural flood management procedures through water storage, captured through environmental management schemes. We are also planning to complete works in the coming years on the KSD downstream of the Proposed Scheme which will help improve discharge from the KSD to the estuary and therefore help address these potential impacts.

It is acknowledged that much of the land surrounding the Proposed Scheme is currently under environmental stewardship agreements, however these are due to cease within the next five years, and measures included within the MAP (see section 3.2.2 and Appendix J for further information) including refurbishment of existing water control structures within Moorlinch, West Moor and King's Sedgemoor (Egypt's Clyce) RWLAs during 2020/2021 and monitoring of water levels within Aller Moor, King's Sedgemoor, West Sedgemoor, Wet Moor, Moorlinch, Huish Level, Currymoor, Southlake Moor and Chedzoy with a view to altering existing WLMPs or establishing new WLMPs over the next five years to ensure 'no change' to existing conditions during winter months.

Further detailed discussions regarding the MAP will take place with landowners in parallel with the ES consultation.

Some agricultural practices directly adjoining the Proposed Scheme may have to be modified in a small way due to increased footprint of the re-profiled flood embankments. The raised banks will comprise of a 1:5 back slope, which will still allow livestock to access the KSD/Sowy for drinking water, thereby not adversely impacting on these agricultural practices.

Overall, it is considered that the Proposed Scheme has the ability to sustain and benefit some agricultural practices and reduce the risk of negative financial implications including crop/livestock losses as a result of flooding. Overall a negligible impact (not significant) is anticipated on agricultural practices based on a negligible magnitude and a medium value receptor practices based on a negligible magnitude and a medium value receptor.

10.5.2. Recreation and amenity

Construction

There are several PRowS which are located within/cross the construction footprint (BW8/6, BW 36/5, BW31/16 and L1/1) or are partially located immediately adjacent to the construction footprint (L 1/8 and L1/3). Users of these PRow are likely to be adversely impacted by construction activities from the use of machinery, delivery of materials, noise and HGV movements. Access along PRow BW 8/6 and 36/5 where they cross the works area will be managed through very localised diversions managed by banksmen, with users segregated from the works area via rope fencing. Users of the PRow (L 1/3 and L 1/8 which form part of the River Parrett Trail) are less likely to be adversely impacted by these construction activities as these PRow are predominantly set further away from the construction footprint. All of these PRow will be accessible during the construction period and no severance or reduced access for users of these PRow is anticipated. Overall, the Proposed Scheme is therefore likely to result in minor adverse impacts (not significant) to users of the PRow which are located/cross the construction footprint based on a low magnitude and a medium value receptor.

As outlined in Table 10.5, there are numerous PRow and footpaths located immediately adjacent to and within the wider area of the proposed haulage routes for the Proposed Scheme (predominantly within and surrounding the settlements of Westonzoyland, Middlezoy and Aller) which are used by the local community and recreational users. The proposed haulage routes will utilise existing roads through the settlements outlined above and the wider study area predominantly via the A372, which is a Class A principal road likely to be used by numerous road and farm vehicles given the rural setting of the study area. Therefore, users of the various PRow and footpaths through these settlements and the wider study area are likely to be already aware of vehicles using roads such as the A372 when commuting and travelling through the study area. Construction vehicle movements using these haulage routes during the construction period are outlined below:

- Lower Sowy: 36HGV movements per day (i.e. 18 return journeys) over a four week period and 38 tractor and trailer movements per day (i.e. 19 return journeys) over an eight week period

- Upper Sowy: Four tractor and trailer movements per day (i.e. two return journeys per day) during one week

Therefore, during the construction phase it is anticipated that the Proposed Scheme is likely to result in minor adverse impacts (not significant) for recreational and other users of the various PRow and footpaths located immediately adjacent to the proposed haulage routes based on a low magnitude and a medium value receptor. The increase in HGV movements might deter some recreational users or the local community from using PRow/footpaths located immediately adjacent to the proposed haulage routes due to safety concerns. No direct adverse impacts to PRow or footpaths located immediately adjacent to haulage routes or within the wider study area are anticipated as these routes are outside of the construction footprint.

Operation

The beneficial impact of the Proposed Scheme (Phase 1) and full River Sowy and King's Sedgemoor Drain Enhancement Scheme on flood risk discussed above with regards to agricultural land holdings will also apply to PRow, thereby improving accessibility and connectivity in the local area. Overall the Proposed Scheme will have a negligible beneficial effect on accessibility of local PRow.

10.6. Mitigation

Socio-economic (agricultural holdings)

Mitigation to reduce nuisance impacts on farmstead properties and agricultural practices during construction include following compliance with current regulations including the Environmental Protection Act 1990. Contractors will be required to submit a Construction Environmental Management Plan (CEMP) which meets the requirements of the EAP (see Appendix K). Such documentation is expected to address not only noise, but other nuisance impacts such as the timing of works, dust, visual impacts and contamination risk and traffic disruption among others.

Mitigation will be put in place to address or offset the worst potential disruption/impacts, such as:

- Ensuring effective liaison with agricultural businesses to understand access needs and timings of key agricultural practices
- Ensuring effective liaison with agricultural businesses to discuss land take requirements and any potential financial compensation for landowners
- Provisions made for livestock requiring drinking water from the KSD/Sowy during the construction period
- Sign-posting diversions (if required)
- Provision of clear and accessible public information for agricultural landowners

Recreation and amenity users

Mitigation measures to reduce adverse impacts on recreational and amenity activities/users will include informing local communities within the study area about the proposed haulage routes through signage and webpage updates. In addition, notices should also be placed on PRow immediately adjacent to the proposed

haulage routes prior and during the construction period to notify users of these PRow of the proximity of the nearby construction works.

10.7. Conclusions and summary of residual effects

There were no significant (moderate or major) effects on population and health receptors identified in the absence of mitigation. With relevant mitigation implemented as outlined above in section 10.6, residual effects during construction and operation of the Proposed Scheme will be further minimised to negligible adverse (not significant) level, with the exception of a negligible beneficial effect (not significant) during operation on flood risks for agricultural land holdings and users of PRow.