West Berkshire Council – Habitats Regulations Assessment. Planning Application 21/02529/COMIND. Proposed change of use from agricultural to new equine facility (racehorse training and stabling) for 45no. horses, with refurbished existing former farm buildings, demolition of existing hay barn, new stable building, new entrance gates and wall, and new landscaping.

Application Details

Application Number/Reference:	21/02529/COMIND	
Application site address:	Ownham Farm High Street Ownham	
	Nr. Boxford, Newbury, RG20 8PL	
Application site area:	14.13ha	
Summary Description of Proposed Dev	velopment (as per submitted	
application form)		
Proposed change of use from agricultural	to new equine facility (racehorse training	
and stabling) for 45no. horses, with refurb	bished existing former farm buildings,	
demolition of existing hay barn, new stabl	e building, new entrance gates and wall,	
and new landscaping.		
Date Application Submitted:	5 th October 2021	
Planning Officer:	Masie Masiiwa	
Officer Undertaking HRA:	Phil Lomax BSc(Hons) CBiol MRSB	
	MCIEEM	
Date of HRA:	7 th June 2023	
Date of Consultation with Natural		
England:		

Summary and Conclusions of the HRA

The submitted planning application has been assessed in accordance with the requirements of Regulation 63 of the Conservation of Habitats and Species Regulations, 2017 (as amended - known as the Habitats Regulations) which requires a Habitats Regulations Assessment (HRA) is made of all plans and projects requiring consent. West Berkshire Council is the local planning authority for the purposes of this planning application and is therefore the competent authority with duties set out under the Habitats Regulations. Regulation 63 (5) sets the test for considering plans and projects that may affect a Habitats Site: *In the light of the conclusions of the assessment, and subject to regulation 64, the competent authority may agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site or the European offshore marine site (as the case may be).* In making that assessment Regulation 63 (6) states that: *In considering whether a plan or project will adversely affect the integrity of the site, the competent authority must have regard to the manner in which it is proposed to be carried out or to any conditions or restrictions subject to*

which it proposes that the consent, permission or other authorisation should be given.

Potential effects from the proposed development of a new facility for the stabling and training of racehorses were considered in relation to two Habitats Sites within a 1km radius:

- River Lambourn SAC
- Kennet and Lambourn Floodplain SAC

Likely significant effects on the latter Habitats Site were screened out.

Water pollution (surface waters or groundwater) was identified as a pathway for impacts to the River Lambourn SAC resulting in likely significant effects on all the qualifying interest features. All parts of the river system are assessed as being in 'unfavourable recovering' condition largely due to the significant exceedances of phosphorous levels against agreed targets and also the river is only at moderate ecological status for macrophytes and so fails the target and is failing to meet the dissolved oxygen target. Further pollution would therefore exacerbate these existing failures.

The proposed development has the potential to result in significant production of additional phosphorous that could result in significant adverse effects on all the qualifying features as a result of:

1. The stabling and exercise of up to 45 horses.

2. Changes in land use and drainage resulting from the proposed development.

NOTE: It is important to note that this application does not seek any new net additional overnight accommodation. The existing farmhouse will be used as the accommodation base for the Head Trainer. This farmhouse connects to an existing septic tank within the application site. Proposed new staff accommodation toilet facilities will drain to an impermeable cesspool which will be regularly collected and emptied by a licensed waste carrier and taken for treatment outside the Lambourn catchment at a licensed facility. There will not therefore be any additional foul wastewater generated by the submitted proposals.

Without mitigation, it is assessed that there is a certain/near certain significant increase in phosphorous loads both into surface waters and groundwaters as a consequence of the following:

<u>Manure from the stabling and care of horses -</u> would potentially result in 342 kg of phosphorous per annum of which 88% (301 kg) could be predicted to leach into the groundwater on site;

<u>Changes in land use and surface water drainage -</u> The pre-development land use is calculated to result in 9.37 kg/TP/yr and the post-development land use as 2.29 kg/TP/yr.

The significant overall net increase in phosphorous was assessed as having adverse effects in relation to all the conservation objectives of the River Lambourn SAC.

An assessment was then made of the package of mitigation measures that has been submitted following detailed discussions between the applicants, their agents and consultants and the Council as local planning authority and competent authority under the Habitats Regulations. These mitigation measures have been designed to address the above adverse effects on the integrity of the SAC and consist of the following:

- Manure collection and removal –The applicants will undertake to ensure that all manure from the stables (and other indoor and outdoor spaces where horses are kept for training, treatment or assessment) is regularly collected and removed both from the application site but also from the Lambourn catchment by a licensed waste carrier so as to avoid any additional phosphorous leaching into groundwaters from animal wastes;
- 2. All contaminated waters including those from the stable floors, the manure heap, the stable yards and horse washdown facilities etc. will be drained and treated separately to the uncontaminated surface water flows from e.g. the rooves of the new buildings and the hard-standing areas. Contaminated waters will not be allowed to be infiltrated into the ground but will be conveyed through pipe networks to an impermeable lagoon from where it will be regularly removed from the site and from the Lambourn catchment by a licenced waste carrier for appropriate remedial treatment at a suitable licensed facility;

These mitigation measures were assessed as being likely to be highly effective and can be secured through planning conditions and legally binding planning agreements that will include monitoring requirements to act as a check that the mitigation measures are being as effective as predicted. With all these mitigation measures secured and implemented over the lifetime of the project it is calculated that the proposed development will result in a net decrease in phosphorous loads to the River Lambourn SAC of -7.08 kg/TP/yr compared to the current baseline position.

Therefore, it is concluded that the application will not result in any adverse effects on the integrity of the River Lambourn SAC if planning permission is granted, either alone or in-combination with any other plans or projects in the Lambourn catchment.

Stage 1: Screening for likely significant effects

Details of Potentially Affected Habitats Sites

Figure 1 – Habitats Sites within 1km of the application site (approx. red line boundary)



Table 1a Summary of the key features of the River Lambourn SAC

Habitat Site Name:				
The application site lies approximately 280metres west of the River Lambourn				
SAC				
Qualifying features (habitats and species,	Condition assessment (from			
primary and non-primary)	relevant SIP and component SSSI			
	units and reasons if in			
	unfavourable condition)			
Annex I habitats that are a primary reason for	The main threats to this SAC and its			
selection of this site:	qualifying interest features are listed as			
3260 Water courses of plain to montane levels	follows on the Standard Data Form ² :			
with the Ranunculion fluitantis and Callitricho-				
Batrachion vegetation	J02 – Pollution to groundwater			
The Lambourn is an example of sub-type 1 in central	H02 – Human induced changes in			
southern England, a chalk stream discharging into the	hydrological conditions			
middle reaches of the Thames system. For part of its	101 – Invasive non-native species			
length it is a winterbourne, drying through the summer				
months. It is one of the least-modified rivers of this	Further threats and pressures listed in the			
type, with a characteristic flora dominated by pond	Site Improvement Plan (SIP) ³ as follows:			
water-crowfoot Ranunculus peltatus. In the	Siltation			
downstream perennial sections <i>R. peltatus</i> is replaced	Water pollution			
by stream water-	Invasive species			
crowfoot <i>R. penicillatus</i> var. <i>pseudofluitans</i> .	'			

² <u>https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0030257.pdf</u> ³ http://publications.naturalengland.org.uk/publication/4738329056641024

Sub-type 1 has a limited distribution in the UK, being found only in those areas where chalk is present, and is therefore restricted to southern and eastern England. The community is characterised by pond water- crowfoot <i>Ranunculus peltatus</i> in spring-fed headwater streams (winterbournes), stream water crowfoot <i>R. penicillatus</i> ssp. <i>pseudofluitans</i> in the middle reaches, and river water-crowfoot <i>R. fluitans</i> in the downstream sections. <i>Ranunculus</i> is typically associated in the upper and middle reaches with <i>Callitriche obtusangula and C. platycarpa</i> ¹ .	 Hydrological changes Flood defence works Inappropriate cutting/mowing 100% of the units of the River Lambourn Site of Special Scientific Interest (SSSI) that make up the SAC are assessed as being in 'unfavourable recovering' condition⁴. The river is only at moderate ecological status for macrophytes and so fails the target. Invertebrates are monitored at two sites: One is good and the other is high status - the SSSI target is for high throughout. It is considered that flows are characteristic of the river type. However, the river is failing to meet the dissolved oxygen target, but is meeting other targets for organic pollution (ammonia). Recent water quality measurements for the River Lambourn within the SAC show phosphorus concentrations to be exceeding the targets for all units⁵. Any nutrients entering the catchment upstream of the locations which are exceeding their nutrient targets, will make their way downstream and have the potential to further add to the current exceedance. The target standard for Soluble Reactive Phosphorous (SRP) is 20ug/l, annual mean in the headwaters and 30ug/l annual mean in all downstream units. Three year annual mean measurements indicate that the orthophosphate (soluble phosphate) in the headwaters is exceeding target by 63% and downstream by 13% to 28%
Annex II species that are a primary reason for selection of this site 1163 Bullhead Cottus gobio The Lambourn represents bullhead Cottus gobio populations inhabiting chalk streams in central southern England. Good water quality, coarse sediments and extensive beds of submerged plants again provide excellent habitat for the species. The bullhead Cottus gobio is a small bottom-living fish that inhabits a waisty of rivers.	See above. Water Framework Directive (WFD) reports that fish are at moderate status.
isn that inhabits a variety of rivers, streams and stony lakes. It appears to favour fast-flowing, clear shallow water with a hard substrate (gravel/cobble/pebble) and is frequently found in the headwaters of upland streams. However, it also occurs in lowland situations on softer substrates so long as the water is well-	

¹ <u>https://sac.jncc.gov.uk/habitat/H3260/</u>

⁴https://designatedsites.naturalengland.org.uk/ReportUnitCondition.aspx?SiteCode=S2000155&Repo rtTitle=River%20Lambourn%20SSSI ⁵ http://publications.naturalengland.org.uk/publication/6209702580191232

oxygenated and there is sufficient cover. It is not found in badly polluted rivers ⁶ .	
Annex II species present as a qualifying feature, but not a primary reason for site selection:	See above.
1006 Prook Jamprov / amotro planori	WFD reports that fish are at moderate
Lampetra planen	status.
The brook lamprey <i>Lampetra planeri</i> is a primitive, jawless fish resembling an eel, and is the smallest of the lampreys found in the UK. It is a non-migratory freshwater species, occurring in streams and occasionally in lakes in north-west Europe. Like other lamprey species, the brook lamprey requires clean gravel beds for spawning and soft marginal silt or sand for the ammocoete larvae. It spawns mostly in parts of the river where the current is not too strong ⁷ .	

Conservation objectives

The Conservation Objectives for the SAC, against which any likely significant effects should be assessed are stated to be as follows⁸:

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:

- The extent and distribution of qualifying natural habitats and habitats of qualifying species
- The structure and function (including typical species) of qualifying natural habitats
- The structure and function of the habitats of qualifying species
- The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely
- The populations of qualifying species, and,
- The distribution of qualifying species within the site.

Table 1b Summary of the key features of the Kennet and Lambourn Floodplain SAC Habitat Site Name:

habitat one hame.			
The application site lies approximately 400metres south west of the Kennet and			
Lambourn Floodplain SAC			
Qualifying features (habitats and	Condition assessment (from relevant		
species, primary and non-primary)	SIP and component SSSI units and		
	reasons if in unfavourable condition)		
The SAC is designated for the following	The main threats to this Annex II species and its		
qualifying interest feature:	supporting wetland habitat are listed as follows		
Annex II species that are a primary reason for	on the Standard Data Form ¹¹ :		
selection of this site	A02 – Modification of cultivation practices		
1016 Desmoulin's whorl snail Vertigo	J02- Human induced changes in hydrological		
moulinsiana	condition.		

⁶ <u>https://sac.jncc.gov.uk/species/S1163/</u>

⁷ <u>https://sac.jncc.gov.uk/species/S1096/</u>

⁸ http://publications.naturalengland.org.uk/publication/5757637085888512

¹¹ https://sac.jncc.gov.uk/site/UK0030044

The cluster of sites selected in the Kennet and Lambourn valleys supports one of the most extensive known populations of Desmoulin's whorl snail Vertigo moulinsiana in the UK and is one of two sites representing the species in the south-western part of its range in the important chalk stream habitat. Integrity of the population is being maintained by taking measures, including habitat creation, to safeguard populations. The habitat occupied at this site differs from the Fenland sites in East Anglia in that it is predominantly reed sweet- grass <i>Glyceria maxima</i> swamp or tall sedges at the river margins, in ditches and in depressions in wet meadows ⁹ . Desmoulin's whorl snail <i>Vertigo moulinsiana</i> is the largest <i>Vertigo</i> species, with a shell height up to about 2.6 mm. It is restricted to calcareous wetlands, usually bordering lakes or rivers, or in fens. High humidity appears to be important in determining local distribution within sites. It normally lives on reed-grasses and sedges, such as reed sweet-grass <i>Glyceria maxima</i> and tussocks of greater pond-sedge <i>Carex</i> <i>riparia</i> and lesser pond-sedge <i>C. acutiformis</i> , where it feeds on the microflora, and in autumn it may ascend taller reeds and scrub. Like all Annex II <i>Vertigo</i> species, it is highly dependent on maintenance of existing local hydrological conditions ¹⁰ .	 H02- Pollution to groundwater Further threats and pressures listed in the Site Improvement Plan (SIP)¹² as follows: Change in land management Inappropriate water levels Hydrological changes Water pollution 82.89% of the units of the River Lambourn Site of Special Scientific Interest (SSSI) that make up the SAC are assessed as being in 'favourable' or 'unfavourable recovering' condition. However, 16.01% is assessed as 'unfavourable declining' status¹³. Desmoulins whorl snail has been declining in several SSSI units based on surveys undertaken in 2011-2014 and has disappeared entirely from three units where it was previously abundant. Low water levels and resultant low soil moisture levels are implicated resulting in changes to the marsh/fen habitat required by the snails.
-	

Conservation objectives

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- The extent and distribution of the habitats of qualifying species
- The structure and function of the habitats of qualifying species
- The supporting processes on which the habitats of qualifying species rely
- The populations of qualifying species, and,
- The distribution of qualifying species within the site.

Summary of Potential Effects on Habitats Sites

The application site of 14.14ha lies within the larger Ownham Farm site which is still used for agriculture. Based on aerial imagery (dated 2021 at the time of the planning

⁹ <u>https://sac.jncc.gov.uk/species/S1016/</u>

¹⁰ <u>https://sac.jncc.gov.uk/species/S1016/</u>

¹²http://publications.naturalengland.org.uk/publication/4738329056641024

¹³https://designatedsites.naturalengland.org.uk/ReportConditionSummary.aspx?SiteCode=S2000109 &ReportTitle=Kennet%20and%20Lambourn%20Floodplain%20SSSI

application – see Figure 2) and the submitted Nutrient Neutrality Assessment¹⁴ the application site consists of the land uses shown in Table 2.

Land Use Type	Existing Area (2021)	Proposed Area	Change
Urban	1.3ha	1.4ha	+0.1ha
Arable Crops	4.8ha	0	-4.8ha
Lowland Grazing	8.0ha	12.8ha ¹⁵	+4.8ha
TOTAL	14.1ha	14.2ha	

• •		
Table 2 Summar	v of current and	proposed land uses

Information submitted by the applicant's consultants¹⁶ indicates that the pasture was used for a combination of grazing mostly by sheep and hay cutting. The land is grazed with sheep for two months of the year, at a stocking rate of 40 sheep/ha and then a hay cut is taken in the summer. No information has been submitted in relation to the type of arable crops cultivated.

Figure 2 – Current agricultural land uses within the application site in 2021 (blue outline)



The proposed development is intended to provide a new facility for the stabling and training of racehorses to include:

¹⁴ Upper Farm, Ownham Nutrient Neutrality Assessment & Mitigation Strategy (NNAMS). 23rd April 2022. WCI Wastewater Engineers

¹⁵ It should be noted that most of the land will be used for the training of horses and not for grazing under the submitted plans.

¹⁶ Upper Farm, Ownham (planning reference 21/02529/COMIND).Letter dated 12th January 2023. Crossman Associates.

- Stabling for a total of 45 horses (including refurbishment of existing farm buildings and construction of new buildings)
- Site office
- Veterinary facility
- Stable yards
- Horse washdown facility
- The Trainer and Assistant Trainer (both full time) will have a permanent presence on site and be accommodated in the proposed Head Lad's House, the existing farm dwelling on site
- Horse walker
- Lunge pen
- 2 sand arenas
- 6 paddocks
- 500 metres of carpet gallops
- 1,140 metres of woodchip gallops
- 1,838 metres of walkway surfaced with recycled road planings
- Car parks
- Etc.

Care of the horses will be required 24 hours a day 7 days a week and therefore there is a requirement for permanent on site accommodation which is to be located within the existing farmhouse building.

The proposed development is located within 400metres from the two closest Habitats Sites, the River Lambourn SAC and the Kennet and Lambourn Floodplain SAC. The application site extends across two major LANDIS soil types¹⁷:

- Soilscape 18 On the upper (westernmost) half of the site. Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils with impeded drainage (see Figure 3a);
- Soilscape 7 On the lower (easternmost) half of the site. Freely draining slightly acid but base-rich loamy soils that are freely draining (see Figure 3b).

¹⁷ <u>https://www.landis.org.uk/soilscapes/index.cfm</u>



Figure 3a – Distribution of Soilscape 18 (impeded drainage) within the application site

Figure 3b - Distribution of Soilscape 7 (free draining) within the application site



A surface water drainage system has been proposed that will result in the majority of the surface water run-off infiltrating into the ground via an infiltration basin.

It is planned to complete and open the proposed facility as soon as possible.

Based on the above considerations, Table 3 summarises the potential effects on Habitats Sites.

Potential Effect Pathways to	Construction Phase	Operational Phase	Alone	In- Combination
Habitats Sites				
Habitat	U	U	U	U
destruction/loss				
Habitat change/	U	U	U	U
degradation				
Noise and vibration	U	U	U	U
pollution/disturbance				
Light	U	U	U	U
pollution/disturbance				
Air pollution	U	U	U	U
Water pollution	U	Р	Р	Р
(surface waters or				
groundwater)				
Hydrology and water	U	U	U	U
resources (changes				
to water levels,				
water flows and				
water volumes)				
Invasive Non-Native	U	U	U	U
Species (spread of				
or introduction of)				
Barriers to species	U	U	U	U
movements e.g.				
severance of linear				
habitats, loss of				
connecting habitats,				
etc. (Note that				
noise, vibration,				
light, changes to				
water quality or				
water levels etc. can				
all act as parriers				
100)				
Impacts on	U	U	U	U
Tunctionally linked				

Table 3 Assessment of potential effects on Habitats Sites

Potential Effect Pathways to Habitats Sites	Construction Phase	Operational Phase	Alone	In- Combination
habitats and species ¹⁸				
Other (please specify)	None	None	None	None

NOTE: P = Potential U = Unlikely

Given the nature of the proposed development and its physical separation from the River Lambourn SAC and the Kennet and Lambourn Floodplain SAC, the great majority of potential impact pathways to these Habitats Sites can be screened out both during the construction and operational phases of the proposed development.

The only likely significant effect predicted from the proposed development on these Habitats Sites is through water pollution as a result of the increase in nutrients, most notably phosphorous, that will result from the equine facility during the operational phase. The additional nutrients are predicted to arise from the following activities:

- The stabling, care and exercise of up to 45 horses resulting in high volumes of manure and slurry containing phosphorous.
- Changes in land use and land management resulting in potential increases in phosphorous from land drainage;

West Berkshire Council as local planning authority for West Berkshire and competent authority under the Conservation of Habitats and Species Regulations, 2017 (as amended) – the Habitats Regulations – was notified by Natural England on 16th March 2022 that in relation to the River Lambourn SAC: "*A plan or project will be relevant and have the potential to affect the water quality of the designated site where:*

• It creates a source of water pollution (e.g. discharge, surface run off, leaching to groundwater etc) of either a continuous or intermittent nature or has an impact on water quality (e.g. reduces dilution). AND

• There is hydrological connectivity with the designated site i.e. it is within the relevant surface and/or groundwater catchment. AND

• The designated sites interest features are sensitive to the water quality pollutant/impact from the plan/project".

The proposed development:

- will create a source of water pollution (as outlined above);
- is in hydrological connectivity with the River Lambourn SAC as it is within the river catchment (please see Figure 4) and within the impact risk zone for nutrients; and
- the River Lambourn SAC is sensitive to the pollutant impact as noted under the condition column of Table 1a.

¹⁸ <u>http://publications.naturalengland.org.uk/publication/6087702630891520</u>



Figure 4 - Application site (light blue area) in relation to the nutrient impact zone of the River Lambourn SAC (dark blue hatching)

Table 3 summarises the likely significant effects of the proposed development without mitigation. European Union (EU) case law has determined that measures intended to mitigate for any harmful effects on a Habitats Site cannot be considered at the Stage 1 Screening Assessment stage of a HRA¹⁹. It is important to note that this application does not seek any new net additional overnight accommodation and therefore there will be no additional foul wastewater requiring treatment.

Table 3:	Asses	sment	of Like	y Significar	nt Effects
11 1 4 4	- 0'1-	<u> </u>		0.1.0	

Habitats Site: River Lambourn SAC				
Qualifying Feature (from Table 1)	Impact Pathway (from Table 2)	Likely Significant Effects (either alone or in- combination with other plans and projects in relation to the conservation objectives from Table 1)		
3260 <u>Water courses</u> of plain to montane levels with the	Water pollution (surface waters or groundwater)	Likely significant effects on:The structure and function (including		

Ranunculion fluitantis and Callitricho- Batrachion vegetation		 typical species) of qualifying natural habitats; The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely
1163 <u>Bullhead</u> Cottus gobio	Water pollution (surface waters or groundwater	 Likely significant effects on: The structure and function of the habitats of qualifying species; The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely; The populations of qualifying species; and The distribution of qualifying species within the site
1096 <u>Brook</u> <u>lamprey</u> Lampetra planeri	Water pollution (surface waters or groundwater)	 Likely significant effects on: The structure and function of the habitats of qualifying species; The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely; The populations of qualifying species; and The distribution of qualifying species within the site
Habitats Site: Kennet	and Lambourn Floodplain	SAC
Qualifying Feature (from Table 1)	Impact Pathway (from Table 2)	Likely Significant Effects (either alone or in- combination with other plans and projects in relation to the conservation objectives from Table 1)

1016 Desmoulin's	Water pollution (surface	No likely significant effects
<u>whorl snail</u> Vertigo	waters or groundwater)	predicted
moulinsiana		

Based on the results of the Stage 1 Screening Assessment likely significant effects on the following Habitats Sites are screened out from further assessment:

• Kennet and Lambourn Floodplain SAC

Based on the results of the Stage 1 Screening Assessment likely significant effects on the following Habitats Sites cannot be screened out and require further assessment:

• River Lambourn SAC.

Stage 2: Appropriate assessment

Table 4 contains a summary of the potential impacts of the proposed development on the integrity of the River Lambourn SAC without any mitigation measures.

Potential Effects Pathways	Probability and Risk Level (Without Mitigation)	Consequences for the SAC Qualifying Features and Conservation Objectives
Water pollution (to surface waters and groundwater) as a result of: 1. The stabling and training of up to 45 horses. 2. Changes in land use and	Certain/near certain significant increase in phosphorous loads both into surface waters and groundwaters as a consequence of the following:	3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation
drainage resulting from the proposed development. NOTE: It is important to note that this application does not	<u>Manure from the stabling and</u> <u>care of horses</u> Various research studies have found that horses produce large amounts of phosphorous. For example in one study,	Advice from Natural England dated 16 th March 2022, identified the River Lambourn SAC as being in unfavourable condition due to unnaturally high levels of phosphorous.
seek any new net additional overnight accommodation. The existing farmhouse will be used as the accommodation base for the Head Trainer. This farmhouse connects to an existing septic tank within the application site. Proposed new	horses were found to excrete an average of 20.9 grams of phosphorus per day in their faeces, \pm 1.4 grams. Excretion was smallest, 20 grams, in horses on a hay-only diet. The average daily phosphorus excretion amounted to 7.6 kg	Recent water quality measurements for the River Lambourn within the SAC show phosphorus concentrations to be exceeding the targets for all

Table 4 Appropriate assessment without mitigation

Potential Effects Pathways	Probability and Risk Level	Consequences for the SAC Qualifying
	(Without Mitigation)	Features and Conservation Objectives
staff accommodation toilet facilities will drain to an impermeable cesspool which will be regularly collected and emptied by a licensed waste carrier and taken for treatment outside the Lambourn catchment at a licensed facility. There will not therefore be any additional foul wastewater generated by the submitted proposals.	in a year. The soluble part of the total phosphorus in faeces accounted for about 88%. This portion is vulnerable to runoff losses and may leach into groundwaters. ²⁰ On the basis of these research findings therefore, and based on the precautionary principle, taking the worst case scenario of up to 45 horses on the application site, would result in 342kg of phosphorous per annum of which 88% (301kg) could be predicted to leach into the groundwater on site. The soils on the site have been established as a mixture of: Soilscape 18 – On the upper (westernmost) half of the site (see Figure 3a). Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils with impeded drainage; and Soilscape 7 - On the lower (easternmost) half of the site (see Figure 3b). Freely draining slightly acid but base- rich loamy soils that are freely draining slightly acid but base- rich loamy soils that are freely draining. <u>Slurry/Liquid Wastes</u> In addition to the solid manure, the stabling and treatment of up to 45 horses will also result in the production of liquid wastes including urine containing phosphorous as well as nitrogen. As the application site is within a Nitrate Vulnerable Zone (NVZ) there are strict rules on the storage and management of organic wastes such as horse	units ²⁵ . Any nutrients entering the catchment upstream of the locations which are exceeding their nutrient targets, will make their way downstream and have the potential to further add to the current exceedance. The target standard for Soluble Reactive Phosphorous (SRP) is 20ug/l, annual mean in the headwaters and 30ug/l annual mean in all downstream units. Three year annual mean measurements indicate that the orthophosphate (P2O5 soluble phosphate) in the headwaters is exceeding target by 63% and downstream by 13% to 28%. The overall condition of the watercourse habitat which supports the designated features is in large part dependent on the water quality within it. The occurrence of excessive nutrients in the watercourse can impact on the competitive interactions between high plant species and between higher plant species and algae, which can result in a dominance in attached forms of algae and loss of characteristic plant species. Changes in plant growth and community composition and structure can have implications for the wider food web, and the species present. Increased nutrients and the occurrence of eutrophication can also impact on the dissolved oxygen levels in the waterbody and substrate condition, also impacting on
Catchment at a licensed facility. There will not therefore be any additional foul wastewater generated by the submitted proposals.	therefore, and based on the precautionary principle, taking the worst case scenario of up to 45 horses on the application site, would result in 342kg of phosphorous per annum of which 88% (301kg) could be predicted to leach into the groundwater on site. The soils on the site have been established as a mixture of: Soilscape 18 – On the upper (westernmost) half of the site (see Figure 3a). Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils with impeded drainage; and Soilscape 7 - On the lower (easternmost) half of the site (see Figure 3b). Freely draining slightly acid but base- rich loamy soils that are freely draining. <u>Slurry/Liquid Wastes</u> In addition to the solid manure, the stabling and treatment of up to 45 horses will also result in the production of liquid wastes including urine containing phosphorous as well as nitrogen. As the application site is within a Nitrate Vulnerable Zone (NVZ) there are strict rules on the storage and management of organic wastes such as horse manure. ²¹ Horses will produce	The target standard for Soluble Reactive Phosphorous (SRP) is 20ug/l, annual mean in the headwaters and 30ug/l annual mean in all downstream units. Three year annual mean measurements indicate that the orthophosphate (P2O5 soluble phosphate) in the headwaters is exceeding target by 63% and downstream by 13% to 28%. The overall condition of the watercourse habitat which supports the designated features is in large part dependent on the water quality within it. The occurrence of excessive nutrients in the watercourse can impact on the competitive interactions between high plant species and between higher plant species and algae, which can result in a dominance in attached forms of algae and loss of characteristic plant species. Changes in plant growth and community composition and structure can have implications for the wider food web, and the species present. Increased nutrients and the occurrence of eutrophication can also impact on the dissolved oxygen levels in the waterbody and substrate condition, also impacting on biota within the river.

 ²⁰ From: Saastamoinen, M.; Särkijärvi, S.; Valtonen, E. The Effect of Diet Composition on the Digestibility and Fecal Excretion of Phosphorus in Horses: A Potential Risk of P Leaching? Animals 2020, 10, 140. <u>https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7022629/</u>
 ²¹ <u>https://www.gov.uk/guidance/storing-organic-manures-in-nitrate-vulnerable-zones</u>
 ²⁵ <u>http://publications.naturalengland.org.uk/publication/6209702580191232</u>

Potential Effects Pathways	Probability and Risk Level (Without Mitigation)	Consequences for the SAC Qualifying Features and Conservation Objectives
	large volumes of urine and this is normally removed with the solid manures (and woodchips, straw etc) when stables are cleaned out. The liquid portion of organic manure that is produced by livestock while in a yard or building is called slurry. It too contains phosphorous, though in much lower quantities than solid manure. It includes animal bedding and water that drains from areas where animals are kept. Landowners must manage liquid slurry that drains off on a waterproof surface where it can be collected If the solid that remains can be stacked in a heap without leaking liquid, it can be treated as farmyard manure. If not, it's still slurry. If there is leakage from a stack, this must be collected and treated as slurry ²² .	 The following adverse effects on integrity are predicted as a consequence of increased phosphorous pollution and deterioration in water quality – adverse effects on: The structure and function (including typical species) of qualifying natural habitats; and The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely.
	The local planning authority must ensure therefore in considering the submitted planning application that satisfactory provision is being made within the proposed waste management and drainage systems for the proper storage of manures and the proper treatment and collection and management of slurry. These requirements are enforced by the Environment Agency. Any slurry that is not properly collected and managed will seep into the groundwaters or the surface water drainage that flow into the nearby River Lambourn SAC.	

²² <u>https://www.gov.uk/guidance/storing-organic-manures-in-nitrate-vulnerable-zones#storing-solid-manures</u>

Potential Effects Pathways	Probability and Risk Level (Without Mitigation)	Consequences for the SAC Qualifying Features and Conservation Objectives
	 layout must not allow uncontrolled run-off from: dirty yards washing out of stables soaking hay to suppress dust exercise pools - due to the presence of treatment chemicals and associated sediments or solids. This is in accordance with Government guidance²³. 	
	Liquid waste must be collected and stored in a waterproof container (such as an impermeable lagoon or a sealed effluent tank). It can then be removed or disposed of at a permitted facility or land spread.	
	<u>Changes in Land Use and</u> <u>Management</u> Set against this potential increase in phosphorous loads, the existing agricultural uses will cease within the application site boundaries (but continue within the wider farm estate). Using the current version of the Nutrient Neutrality Budget Calculator for the River Lambourn SAC ²⁴ and based on the soil types and current land uses shown in Table 2 and Figures 3a and 3b, the current land uses with in the application site are calculated to be generating a total of 9.37kg/TP/yr (see Figures 5a to 5c below).	
	The predicted future land use is shown in Figure 6 and as the majority of the land will be used for horse training the land use has been assessed as greenspace for the purposes of	

 ²³ <u>https://www.gov.uk/guidance/keeping-horses-on-farms#horse-manure-and-other-types-of-waste</u>.
 ²⁴ <u>https://www.westberks.gov.uk/phosphate-calculator</u>

Potential Effects Pathways	Probability and Risk Level (Without Mitigation)	Consequences for the SAC Qualifying Features and Conservation Objectives
	the calculations. The future land uses are predicted to generate 2.29 kg/TP/yr (see Figure 6 below). On balance and without mitigation therefore, overall the submitted application could generate an additional 301 + 2.29 - 9.37kg/TP/yr = + 293.92 kg/TP/yr.	
As above	As above	 1163 Bullhead Cottus gobio Changes in plant growth and community composition and structure can have implications for the wider food web, and the species present including fish such as the bullhead. Increased nutrients and the occurrence of eutrophication can also impact on the dissolved oxygen levels in the waterbody (especially during lower flows during summer) and substrate condition, impacting on fish such as the bullhead and the invertebrate food on which it depends. The following adverse effects on integrity are predicted as a consequence of increased phosphorous pollution and deterioration in water quality – adverse effects on: The structure and function of the habitats of qualifying species; The supporting processes on which qualifying natural habitats of qualifying species rely; The populations of qualifying species; and The distribution of qualifying species within the site

Potential Effects Pathways	Probability and Risk Level <i>(Without Mitigation)</i>	Consequences for the SAC Qualifying Features and Conservation Objectives
As above	As above	 1096 Brook lamprey Lampetra planeri As above. They live most of their lives as ammocete larvae in burrows feeding on bacteria, algae and other types of detritus from the water and the mud. Changes in the water chemistry and BoD, etc. can all have potentially serious impacts. The following adverse effects on integrity are predicted as a consequence of increased phosphorous pollution and deterioration in water quality – adverse effects on: The structure and function of the habitats of qualifying species; The supporting processes on which qualifying natural habitats of qualifying species; and The populations of qualifying species; and

Figure 5a – Phosphorous export loads from current grazing and hay making regime

S	tage 2											
	User	Inputs										
Ca	Itchment:		Kennet									
So	il drainage type:		Impeded	drainage								
An	nual average rainfall (mm):		700.1 - 750	1								
Wi	thin Nitrate Vulnerable Zone (NVZ)	:	Yes									
Ex	isting land use type(s)	Area (ha)	Annual (nutrient (kg TP)	phosphorus export								
Mix	xed	8.00	6.91									
						ļ						
		-										
	Calact aviaiti											
	Select exisitin	ig (pre-										
	developmen	t) land				ļ						
	use types fro	m the				ļ						
	drop down I	st.										
	Tet	sl: 8	3	6.91								
	TOG											
	Background River La	mbourn	SAC	Instruction	s		Development site details	Development site details Stage 1	Development site details Stage 1 Stage 2	Development site details Stage 1 Stage 2 Stage 3	Development site details Stage 1 Stage 2 Stage 3 +	Development site details Stage 1 Stage 2 Stage 3 (+)

Figure 5b - Phosphorous export loads from current arable cultivation



Figure 5c - Phosphorous export loads from current residential urban land use

User Ir	nputs			
Catchment:	Kennet	_		
Soil drainage type: Annual average rainfall (mm): Within Nitrate Vulnerable Zone (NVZ):	Impeded drainage 700.1 - 750 Yes			
Existing land use type(s)	Arnual phosphoru Area (ha) nutrient export (kg TP)	15		
Residential urban land Select exisiting development) use types fron drop down lis	130 189 y (pre- land t.	10		
rotar.	1.5	1.05		_

Figure 6 – Phosphorous export loads from future land use



Without mitigation there it is certain/near certain that the proposed development will have an adverse effect on the integrity of the River Lambourn SAC as a result of the significant increase in phosphorous loads both into groundwater and receiving surface waters in the Lambourn catchment.

The applicants and their agents and consultants, have in discussion with the Council as local planning authority and competent authority under the Habitats Regulations, developed a package of mitigation measures to address these predicted impacts. These mitigation measures are summarised in Table 5.

Government guidance²⁶ (based on case law) states that if mitigation is required to avoid or mitigate any potential effects on the integrity of a Habitats Site as a result of a proposed plan or project, the competent authority must be sure that the mitigation will be effective. *To do this, your assessment will need to show:*

- how the measures would be implemented and monitored, and how long for
- how you would enforce the measures if you had to
- how certain you are that the measures would work to avoid or reduce effects on the site
- how long it will take for the measures to take effect
- the level of success you expect, or what changes you'd make if monitoring shows the measures may fail

You must make sure that any necessary mitigation measures are put in place now and not wait for adverse effects to happen first.

The guidance goes on to state that:

If mitigation measures are needed to avoid adverse effects, you should attach conditions or take other necessary steps to make sure the measures are carried out. You can make conditions flexible. For example, you could remove conditions if it's clear from monitoring that the risk of negative effects is lower than first thought. You should consult the <u>relevant SNCB</u> to make sure the new conditions are still effective. You should be sure you can enforce the conditions if you need to, and that the proposer is capable of fulfilling them.

Tuble of Toposed II	ingunon measures		
Potential Impacts	Proposed	Reliability and	Implementation
(Without	Mitigation	Likely	and Securing
Mitigation)	Measures	Effectiveness	Mechanism
Water pollution (to	Phosphorous	Removing the	It is proposed to
surface waters and	containing metabolic	phosphorous	secure this critical
groundwater) as a	wastes will accumulate	containing metabolic	mitigation through a
result of:	within the application	wastes (manure and	combination of
	site within three ways:	urine) from the	planning conditions
1. The stabling and	1. Accumulations of	application site would	and a planning
exercising of up to 45	manure within stables	not in themselves	agreement.
horses resulting in	where horses are kept;	provide effective	
significant loads of	2. Accumulations of	mitigation if these	Planning conditions
manure and liquid	urine within stables	wastes were then	will be used to secure
wastes containing	where horses are kept;	deposited elsewhere	the necessary design

Table 5 Proposed mitigation measures

²⁶ https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site

Potential Impacts	Proposed Reliability and		Implementation
(Without	Mitigation	Likely	and Securing
Mitigation)	Measures	Effectiveness	Mechanism
Potential Impacts (Without Mitigation) large amounts of phosphorous. This could result in an additional 342kg of phosphorous per annum of which 88% (301kg) could be predicted to leach into the groundwater on site.	ProposedMitigationMeasures3. Accumulations of manure on the 12.8ha of greenspace land where horses will be exercised.The revised submitted package of mitigation measures ²⁷ seeks to address all these sources of phosphorous wastes as follows:1. Manure collection and removal – The applicants will undertake to ensure that all manure from the stables (and other indoor and outdoor spaces where horses are kept for treatment, assessment or training including for example the horse walker) is regularly collected and removed both from the application site but also from the Lambourn catchment. Manure wastes will be collected by a licensed waste carrier and taken to a licensed waste disposal site outside the Lambourn catchment.2. Liquid waste collection and removal – In addition to removing the solid waste manure, the liquid wastes will also be collected and removed. The stable floors will be concrete	Reliability and Likely Effectiveness within the Lambourn catchment as the phosphorous would still leach into the catchment groundwaters and ultimately into the River Lambourn SAC. Regularly collecting and removing both the manure and the liquid wastes from the application site <u>and</u> the Lambourn catchment will ensure that the phosphorous is not allowed to leach into the catchment groundwaters and therefore avoid an adverse effect on the River Lambourn SAC. Nutrient neutrality is therefore being achieved by collecting and removing the additional phosphorous at source before it can permeate the catchment.	Implementation and Securing Mechanism features such as the drainage scheme, including the critical separation of surface water run off from contaminated run off from stables and yards. Section 106 of the Town and Country Planning Act, 1990 allows a local planning authority, to enter into a legally- binding agreement or planning obligation with a landowner as part of the granting of planning permission. The obligation is termed a section 106 agreement. It sets out the legally binding covenants of the applicant/landowner which can be enforced by the local planning authority. The S106 agreement will need to secure the implementation of the following requirements: 1.Areas of the application site from which manure is collected (to include all stables and yards and exercise gallops and walkways and grazing paddocks); 2.The minimum frequency of these collections (based on best practice guidance e.g. from the British
	impermeable		removal from stables
	rubber/resin coating ²⁸		and at least twice
	wastes seeping into		pasture);

 ²⁷ Nutrient Management Strategy. 20th March 2023. Ian Pick Associates
 ²⁸ <u>https://www.quattrorubberandresin.co.uk/product/standard-stable-mats-rubber-flooring/</u>

Potential Impacts	Proposed	Reliability and	Implementation
(Without	Mitigation	Likely	and Securing
Mitigation)	Measures	Effectiveness	Mechanism
	the ground. The stable		3. Areas where it is to
	floors will also be fitted		be temporarily stored
	with drainage gullies		pending removal from
	leading to an		the application site
	impermeable foul		and these must meet
	water cesspool below		the following
	ground from where it		requirements:
	will be regularly		 temporary piles of barrage manufactory
	by a licenced waste		noise manure
	carrier for appropriate		stacked where
	remedial treatment at		there is risk of it
	a suitable licensed		draining :to nearby
	facility outside the		drains in fields:
	Lambourn catchment.		within 10 metres
			of a watercourse,
	All contaminated		for example a
	waters including those		stream or river or
	from the stable floors,		within 50 metres
	the manure heap, the		from a spring, well
	horse walkers and		or borehole that
			supplies water for
	drained and treated		people to drink);
	senarately to the		4. Collection of liquid
	uncontaminated		from the storage
	surface water flows		ladoon:
	from e.g. the rooves of		5. Minimum frequency
	the new buildings and		of collection and
	the hard-standing		removal from the
	areas. Horse		application site (and
	washdown wastewater		from the catchment of
	will also be drained to		the River Lambourn)
	the same cesspool for		of all manures and
	regular removal. No		liquid wastes from
	shampoos will be used		6 Requirement for all
	for horse cleaning or		manure and liquid
	stable cleaning. The		wastes to be removed
	annual deep clean of		by an EA licensed
	the stables will be		waste carrier (with
	undertaken using		proof required to be
	steam.		submitted and
			appended to the
	3. Greenspace/pasture		agreement and
	management plan –		updated if the waste
	The applicants Will		carrier changes);
	manure from the		r. Requirement for all
	dallons and walkwave		wastes to be
	where horses are		deposited or treated at
	exercised each dav		a licensed waste
	and from the limited		facility that is both
	grazing activities in the		outside the Lambourn
	greenspace a		catchment and within
	-		West Berkshire (with

Potential Impacts	Proposed	Reliability and	Implementation
(Without	Mitigation	Likely	and Securing
witigation)	Measures	Effectiveness	mechanism
	minimum of twice each week.		proof required to be submitted and appended to the agreement and updated if the waste facility changes); 8. Baseline soil tests to establish the soil phosphorous level before the permitted use commences and repeated soil testing to demonstrate that phosphorous levels have not significantly increased post development (need a reasonable frequency e.g. once a year for the first 3 years and then once every 3 years). 9. Annual report of the amount of manure wastes removed from the application site by the licensed waste carrier.
Water pollution (to surface waters and groundwater) as a result of: 2. Changes in land use and drainage resulting from the proposed development.	Changes in land use are estimated to result in a net reduction in phosphorous loads from 9.37 kg/TP/yr to 2.29 kg/TP/yr based on the calculations using the Nutrient Budget Calculator (see Figures 5a to 5c and 6 above). Therefore, no further mitigation measures are required. Only water draining from the rooves of buildings and from the car park will be drained to the surface water infiltration pool and as described above, all waste liquids will be directed to and collected within impermeable cesspools for regular	No further mitigation required for changes in land use. These changes will result in a beneficial net reduction in phosphorous export loads.	

Potential Impacts	Proposed	Reliability and	Implementation
(Without	Mitigation	Likely	and Securing
Mitigation)	Measures	Effectiveness	Mechanism

Based on the likely effectiveness and deliverability of the submitted mitigation measures as summarised in Table 5, the overall appropriate assessment of the submitted development proposals is summarised in Table 6.

Potential Effects Pathways	Probability and Risk Level <i>(With Mitigation)</i>	Consequences for the SAC Qualifying Features and Conservation Objectives
Water pollution (to surface waters and groundwater) as a result of: 1.The stabling and exercising of up to 45 horses; and 2. Changes in land use and drainage resulting from the proposed development.	Certain/near certain of no adverse effects. The removal of horse manure and liquid wastes from the application site and from the Lambourn catchment will remove the main sources of additional phosphorous resulting from this planning application.	The proposed development will result in an overall improvement in water quality by reducing the amount of phosphorous within the catchment of the River Lambourn SAC. This will have beneficial effects on the achievement of the conservation objectives.
	and associated change in land uses will result in an overall net reduction in phosphorous between the post development land use and the pre- development land use estimated at a – 7.08 kg/TP/yr.	The proposed development will not therefore have any adverse effects either alone or in- combination with any other plans and projects in the Lambourn catchment.

Table 6 Appropriate assessment with mitigation