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Ref: 20022871

M25 Junction 10 Project - TR010030 - Representation for Deadline of 26 November, 2019

Dear Sirs,

Thank you for allowing me to speak at the Open Floor Hearing meeting on November 12, 2019. Please accept my written representation about the issues I have raised.

Below is a list of items / paragraph headings covered in this representation

## **INTRODUCTION**

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**Reconsideration of Wisley bypass / access road**

## **INTRODUCTION**

**About myself**

I have been volunteering for the Surrey Amphibian and Reptile Group (SARG) as a Toad Warden, for 10 years. More recently I became involved in the surveying and monitoring of Natterjack Toad populations at two sites in Surrey, on behalf of the Amphibian and Reptile Conservation (ARC) trust. In addition I have taken on the role of toad warden coordinator for SARG, and I have participated in heathland management efforts conducted by ARC, on various sites in Surrey and Hampshire.

Whilst I am affiliated with SARG and ARC, the views given here are my own.

**Motivation**

My motivation for writing the representations comes both from personal beliefs and from an understanding of the current widespread loss of biodiversity.

As a Christian I believe that “God created”. According to the Scriptures, the natural world was given for man’s enjoyment, and man was given dominion over it. The divine principle of exercising dominion is clarified by the words of Jesus Christ: “(...) whosoever will be great among you, let him be your minister; And whosoever will be chief among you, let him be your servant:” [Genesis 1:1 and Matthew 20:26, 27].

In other words, I believe that it is man’s duty and privilege to protect and nurture the natural world around him.

Furthermore, having a healthy environment and thriving wildlife promotes the mental health of the nation. Thus even if there is an initial investment it will more than pay off in the long run.

On the point of biodiversity, I’d like to highlight two priority species that are affected by the improvement works: common toad (*Bufo bufo*) and adder (*Vipera berus*) have both significantly declined nationally. *Bufo bufo* has suffered above average declines in the south of England. Boldermere Improvement for Amphibians\_Rev1.pptxnd. It is therefore very important to prevent any further declines as a result of the works.

*UKBAP\_Species-HabitatsReview-2007 pg 20*

*<https://www.froglife.org/2016/10/06/goodbye-mr-toad/>*

*<https://www.arguk.org/get-involved/news/vanishing-viper-2019-a-european-approach-to-developing-an-adder-conservation-strategy>*

### **Aims**

The purpose for writing this representation is to ask Highways England to adopt a mitigation strategy that will do two things:

- 1) (Re)Connect fragmented habitats
- 2) Prevent road deaths

Both are indispensable to ensure the survival of wildlife. Isolated pockets of small populations give rise to in-breeding. (Re)Connecting fragmented habitats will widen the genepool and make the populations more robust, thus increasing their chance of survival.

Road deaths result in continual decimation of the population size and in the worst case, can lead to local extinction.

### **Highways England Planned Mitigation**

I welcome the planned mitigation strategy by Highways England to build two toad tunnels under Old Lane by Boldermere, and to convert the existing footbridge into a green bridge.

This is excellent news.

But I believe that more needs to be done to ensure that the toads and adders (and other wildlife) will be able to thrive.

### **Attitudes and Goals of the Governing Body**

I believe that the mitigation strategy chosen, and its benefits for wildlife, depend entirely on the attitudes and goals adopted by the governing body. This is of the utmost importance.

For instance, the goal could be, to do the absolute minimum necessary in order to pay lip service to legal requirements, with a top priority to keep the costs down.

Or, the goal could be, to merely do what is needed in order to halt any further declines in the local populations.

Thirdly, the goal might be, to reverse the decline in order to let the wild populations thrive once again. This would also include a willingness to accept a higher initial cost in the knowledge that the investment will pay for itself in the long term.

I would politely request that Highways England adopt that third stance.

Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006 places a duty on the Council to conserve biodiversity, whereby 'conserve' is clarified as meaning 'restoring or enhancing a population'. This, in my opinion, also leans towards the third set of guidelines.

### **THREE MAIN REQUESTS**

#### **Toad tunnel network Boldermere / A3**

For illustration, please see the accompanying slides  
"Boldermere Improvement for Amphibians\_Rev1.pptx"

#### ***Background information***

Toads spend the first months of their lives in the aquatic tadpole state in their native pond. After metamorphosis into toadlets has occurred, they will move onto land. Toadlets disperse from the pond in search of hunting grounds where they can find the invertebrates that they feed on. Suitable habitats are woodland with good ground coverage, rough grassland with shrubs and ground covering hedges, etc. They also prefer slightly damp or boggy places.

Toadlets are adventurous in nature and provided that the weather conditions are favourable (e.g. mild temperatures combined with rainfall) they will venture into barren areas, (such as presented by a tarmacked road) in hopes of finding rich pastures beyond.

Thus toadlets will disperse radially outward from their native ponds. Toads can disperse up to 2km away from their pond, but many will stay nearer if the habitat is suitable.

When the toads are sexually mature they migrate back to their native ponds in order to breed. Common toads are "explosive" breeders, that is they only breed once a year. Common toads lack a meaningful ability to communicate with others to let them know their willingness to breed. To circumvent this disadvantage they simply all head to the pond at the same time of year. Exactly how the toads know when it is time to move is not fully understood. But the result is, a mass toad migration which takes place anytime from the end of January up to the middle of April, and can last for several weeks.

During this migration the toads are extremely vulnerable to traffic, as many of them have to cross roads that intersect the path between their hunting grounds and their breeding ponds.

Toads progress very slowly. One pace gains a forward movement of about an inch. Every few paces or so, a toad will take a rest, then resume its walk. Thus it can easily be seen that a toad crossing a road will be exposed to danger for a long time. Add to this that sometimes the toads will cross a road diagonally, or walk along it for a while. A toad will easily take 10 to 15 minutes to cross a road. Even with low traffic of one vehicle every 5 to 10 minutes it is virtually impossible for a toad to cross the road without help from humans. Sometimes carcasses can be found where the positioning implies that the amphibian had managed to cross the first lane, and was nearing the opposite kerb, when at the last moment it had been struck by a vehicle.

During the breeding season the male toad tries to capture a female and cling onto her back. This is the breeding position known as "amplexus". Common toad males do not have the capacity to call for the females (as for instance, natterjack toads do). Instead, they choose to sit up in a place with a

good view all around and wait for a female to come by. Once they spot a female they will run and try to climb onto her back. The female will then carry on walking with the male on her back, all the way to the pond.

A tarmacked surface, such as a road, is easier to walk along than having to pick one's way through brambles and nettles. It is also perfect for providing a good, clear view. This is why males will seek out a road to sit in, and females will choose it for walking on. This tendency only exacerbates their vulnerability to road traffic. Coupled with this is the fact that toads emerge at dusk, which during the breeding season at the beginning of the year, coincides with the human rush hour.

### ***Juvenile mortality and sexual maturity***

Toadlets will disperse in any direction.

Toad warden work focuses on helping adults reach their breeding ponds to ensure production of new tadpoles and toadlets.

Less emphasis is placed on helping toadlets, mainly for practical reasons. The migration of toadlets away from their pond occurs from about June to September. The mitigating circumstance is that at this time of year, the sun sets very late so that toadlets attempting to cross a road will be required to face less traffic. Nevertheless, just like their adult counterparts they progress very slowly and even with light traffic loads, many of them never make it to the other side.

Tadpoles and toadlets are at the bottom of the food chain and the toads make up for that by laying hundreds of eggs. They can withstand a significant amount of predation but they are not adapted to the additional huge losses due to road traffic. It is important to accept and understand this if one is to reverse the downward trend in their numbers.

Furthermore, in a balanced ecosystem if prey animals have been decimated significantly, predator numbers will also diminish as a result. This allows the prey animal population to recover. But road traffic is not subject to such natural laws.

The survival of juveniles is important for the survival of the species as a whole. Without a good number of juveniles making it to adulthood and sexual maturity, it is impossible to maintain population stability.

Toadlets reach sexual maturity after 4 years, or 4 to 7 years for females.

That means that in order for the population to remain stable, an adult toad needs to have 4 to 7 consecutive successful breeding seasons.

Once a toadlet has found its preferred hunting ground it tends to remain as loyal to it as it is to its native breeding pond. This implies that a toad needing to cross a road in order to get to its breeding pond, will have to do so again in order to return to its summer quarters. Not only that, in order to maintain population stability the toad needs to be able to repeat the process again next year, and the following year, and the third year after - up to the seventh year in the case of a female.

Let's assume that the toad has a 50% chance of crossing the road without getting hit. It will have a 25% chance of reaching back home safely. To keep breeding for three consecutive years and make it to the pond in the fourth year, the chance is a mere 8% ( $0.5^7 * 100$ ); to even make it back home after the fourth breeding season, the chance is just 4% ( $0.5^8 * 100$ )! If survival to the seventh season is taken as the benchmark, the chance of survival is virtually nil.

Even if we assume a road with very low traffic, where the chance of a single safe crossing is 95% - i.e. a road where the time interval between vehicles is much greater than the time a toad takes to get across - the chance to survive until the fourth breeding season is reduced to 70%. The chance to survive to the seventh breeding season is only 51%.

I hope that these facts help to show that road deaths have a serious detrimental impact on common toad populations. Therefore it is imperative that something be done Boldermere Improvement for Amphibians\_Rev1.pptx to prevent them.

### ***Welfare Issues***

One thing that does not really get a mention in this type of discussion is the issue of animal welfare.

A surprisingly large number of amphibians that are struck by vehicles are not killed instantly. In very many cases they linger on for quite some time. Sometimes they are horribly maimed but try to keep going. On very rare occasions some have survived and made a full recovery. But many die a slow death.

Most people in their right mind wouldn't really like the idea of subjecting sentient animals to a lingering, cruel death.

It makes for a completely different aspect to the entire matter. Something ought to be done, if for no other reason, then purely on compassionate grounds.

### ***Justification***

The aim of this paragraph is to present clear and rational arguments for doing further mitigation work, in addition to that which has already been proposed by Highways England.

Again let me stress how delighted I am with the fact that mitigating toad tunnels are being planned for Old Lane. This is a wonderful step in the right direction.

But it is my conviction - based on years of first-hand experience on a busy toad crossing - that more is needed to enable the toads at Boldermere to maintain their numbers.

Firstly, let's look at the A3. There is a registered toad crossing across the A3, from Boldermere to Wisley Common. It stems from the days when the A3 was a simple road. This toad crossing is no longer active.

Why? Is it because there are no toads? It's not that there are no toads. It's just that no toad stands a chance. The A3 would be very dangerous for a human being to cross now, let alone an amphibian! Thus all the adult toads that might have been on the opposite side, would have been killed attempting to cross, and vice versa. With all the traffic going by, it would even be difficult to find any remains.

What it means is that the adult toads that were breeding in Boldermere and lived on Wisley Common, have become extinct as a result of the A3 expansion. Likewise, the adult toads that were breeding in the ponds on Wisley Common and lived in the woodlands around Boldermere, have become extinct. One might think that now the adult population using the A3 crossing has become extinct, no more deaths will occur at that location.

But this is not the end of the story. Whilst it is unlikely that there will be adult toads attempting to cross, the toadlets most certainly will. Especially since the road is right next to the pond. The toadlets have not yet chosen their summer habitat and they will simply walk in front of them. It is a simple natural process and huge numbers of them are bound to get killed.

This brings us back to juvenile mortality. Toadlets dispersing towards the south and west of Boldermere can do so with a good chance of survival. To the north is the A3, where the chance of a safe crossing is nil and to the west is Old Lane, with a small chance of survival. I believe that the losses of toadlets attempting to cross the A3 year after year, significantly contributes to the decline of the toad population at Boldermere. In order to reverse that trend the A3 leak needs to be stopped up.

Providing underpasses for the A3 would also mean that the amphibian population on the Wisley Common side would be connected again to the population on the Boldermere side.

Whilst toads tend to return to their breeding ponds they do occasionally move to another pond. This would allow for mixing of the genepool. Males that have succeeded in capturing a female might be carried by her to a pond that is different from their own.

Secondly, the proposed toad tunnels in Old Lane might be placed better as shown in the illustration provided in the slides "Boldermere Improvement for Amphibians\_Rev1.pptx". The issue here is that there are actually two breeding ponds used by toads, one of them being Boldermere, the other a smaller pond opposite the junction of the BOAT and Old Lane. Thus toads will cross in both directions, and at both locations. The fence also should be extended in order to protect toads from Boldermere as well as the second breeding pond.

Thirdly, consider the new extension for Elm Lane. This is a devastating development because it dissects the area south of Boldermere, which up to now, was a safe dispersal region for toadlets. Already there are losses on the A3 and Old Lane. With the new extension road, there is an additional very long area along which toads can be killed.

This road is 500m long and it cuts right through the toad habitat. Invariably toads will want to sit on the road and walk along it. Most likely toads will be all along this road from one end to another. It just requires a single car during the evening rush hour at dusk in the migration season, to potentially run over 100 toads in one go.

The toad population is already under enough pressure without this additional hazard.

The proposed 20mph speed limit is welcomed. But most drivers ignore 20mph speed limits unless they are enforced by cameras or better still, by speed bumps.

Furthermore, a 20mph speed limit might help drivers to spot toads more easily but it will not save lives. The only thing that will save amphibians' lives is to stop the car, get out, pick up the animal and move it. Who will want to keep doing that if there are several dozen toads sitting or walking on the road?

I don't think it's a good strategy to make conservation dependent on the goodwill of local people. It would be much better to put the permanent measures in place from the start, that would protect wildlife, irrespective of the willingness of the locals to help. Since this road is a brand new design I would have thought that it will be easy and cost effective to build in the mitigation measures right from the beginning.

One final comment on the assessment that was done with regards to amphibian mortality on roads. (Hels, T. and Buchwald, E (2001) The effect of road kills on amphibian populations. *Biological Conservation* 99 (331-340)).

I think that it is a great idea and a good start to investigate and quantify the issue. Having only read the abstract I do not fully understand the methodology used. Nevertheless it seems that their

approach is flawed, based on what I have observed from toad crossings. To quote from their abstract:

“The probability of getting killed ranged from 0.34 to 0.61 when crossing a road with a traffic load of 3207 vehicles/day.”.

What they are saying is that the toads had up to 66% chance of survival when attempting to cross a road with 3207 vehicles a day.

There are  $24 * 60 = 1440$  minutes in a day. That means on average, there were 2 cars per minute. No toad can cross a road alive with 2 cars per minute.

Of course, the rate of cars would be higher during the rush hour and lower at night. Nevertheless, how would you extrapolate from such a study to a road with lower traffic? Would it be as simple as drawing a straight line graph? Did the research take into account the toad migration during rush hour in the spring? The tendency of toads to sit and walk on roads? The potential for a single car to kill dozens of toads?

In my opinion this study (or its extrapolation) does not truly reflect the impact of the Elm Lane extension on the Bolderemere toad population.

### **Green bridges network A3 / M25**

For illustration, please see the accompanying slides

“M25Jct10GreenBridges”

The M25 / A3 junction cuts the Wisley and Ockham Common SSSI into four sectors.

This prevents smaller animals such as reptiles and amphibians, hedgehogs and other small mammals from moving freely and mixing with the populations present in the other sectors.

Adders (*Vipera berus*), a nationally very vulnerable species, are found on Chatley Heath and Wisley Common, and they are likely to be present on the land to the north of the M25.

Sightings of adders have diminished recently compared to earlier years and it is thought that this might be due to the impoverishment of the genepool as a result of habitat fragmentation.

Sandlizards (*Lacerta agilis*), a protected species, are present on Chatley Heath. Wisley Common has potential to support sandlizards but at the moment no movement is possible.

I am very pleased that the Cockcrow footbridge will be converted to a green bridge as part of the plans. This will form a very important connection between Chatley Heath and Wisley Common.

Please consider a network of green bridges that will enable each of the four sectors of the SSSI to be reconnected.

This could be done by building new bridges in the appropriate locations and / or by modifying existing bridges, where available.

Not only would these green bridges reverse the habitat fragmentation caused by the M25 / A3 road network, they would themselves create new habitats for small mammals, birds and reptiles.

### **Reconsideration of Wisley bypass / access road**

I would like to ask Highways England to reconsider the Wisley bypass / access road scheme.

The chosen scheme causes habitat fragmentation. It cuts off the ancient woodland from the adjacent grassland. It is some distance away from Boldermere but still inside the toadlet dispersion region.

The “snake field” lies nearby, which is being managed as a reptile habitat by the wildlife trust. Reptiles live in the vicinity of the proposed development.

Invariably, these animals will be killed on this road as a result of the habitat fragmentation.

I understand that RHS campaigned heavily to have the access road routed away from the southern border of their grounds.

I understand that there was much public interest aroused concerning the loss of trees.

But was the public really made aware of the implications of routing the access road along the disused airfield? That as a result, more land would be lost in comparison? And that, because of the habitat fragmentation, wildlife would be killed on this road, year after year after year?

Surely losing trees is very upsetting. But given a choice, shouldn't the lesser evil be chosen?

Is this the true spirit of conservation to save one's own property in exchange for more destruction elsewhere?

If the access road was run along the north of the A3, habitat fragmentation with the associated loss of wildlife could be avoided. One proposal included a wall along the new access road to reduce the number of trees needing to be felled (WIS-01a).

From what I am able to understand, this would have been the option with the least detrimental impact on the environment.

Why can this option not be implemented instead of WIS-11, which causes habitat fragmentation, significant land loss and wildlife deaths for many years to come?

I'm not sure about this, but if WIS-01a were chosen, does it imply that the Elm Lane extension would no longer be needed? Which would mean that the entire problem with the toads crossing on that road, would disappear.

Many thanks for considering my thoughts.

Your faithfully,

Regena Coult



## **BOLDERMERE A3 / OLD LANE**

Breeding ponds and natural toadlet dispersion

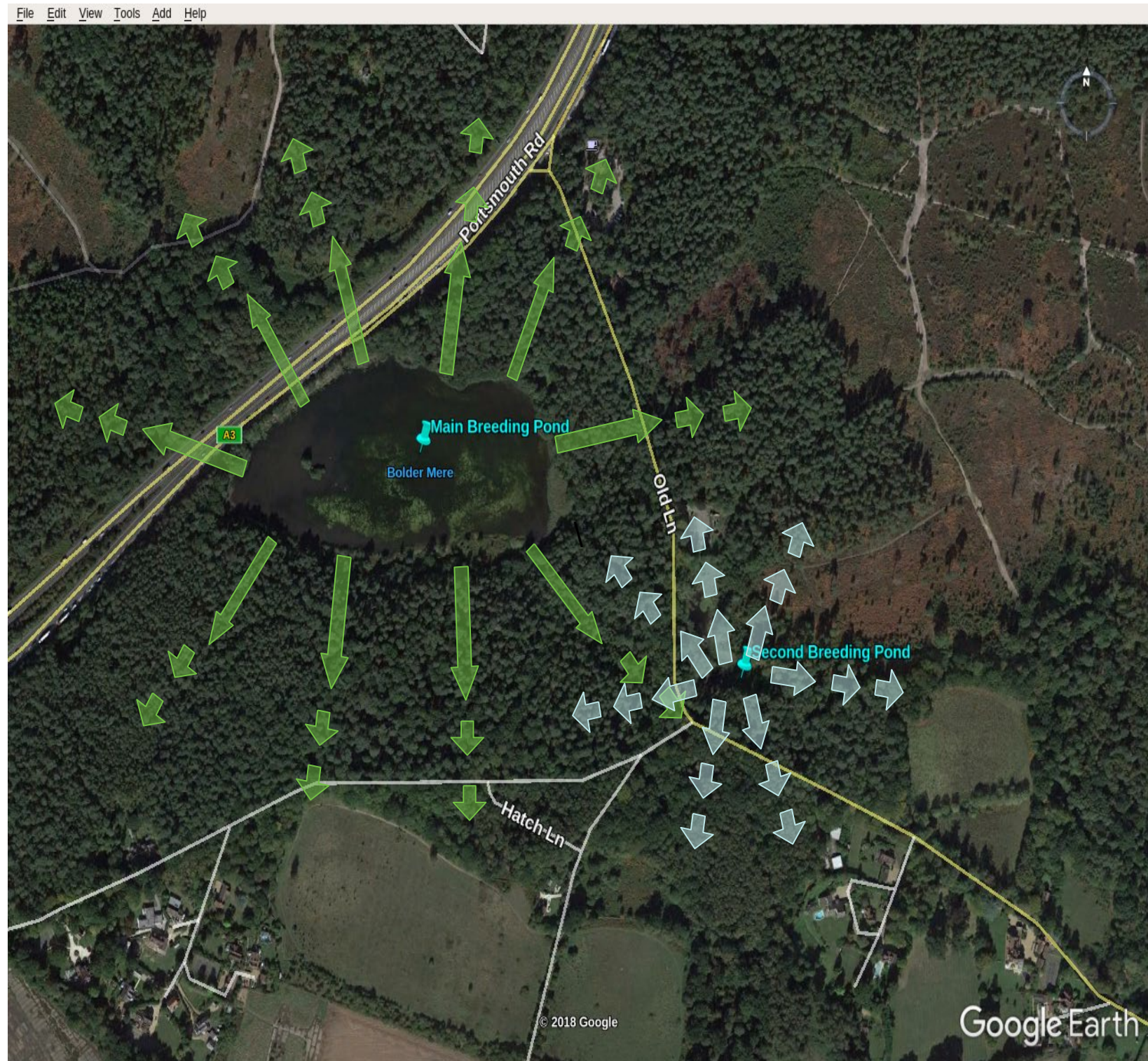
There is a smaller breeding pond besides Boldermere, on the opposite side of Old Lane, as indicated

Toadlets disperse radially outward as shown by the larger arrows

If the habitat is good (i.e. wood, scrubland), toadlets will populate areas further afield, as shown by the smaller arrows - this can be up to two kilometres

Once established, toads will not only return to the same breeding ponds but also to the same summer / winter habitats, every year

There is therefore a crossover of routes as shown on the map



# BOLDERMERE A3 / OLD LANE

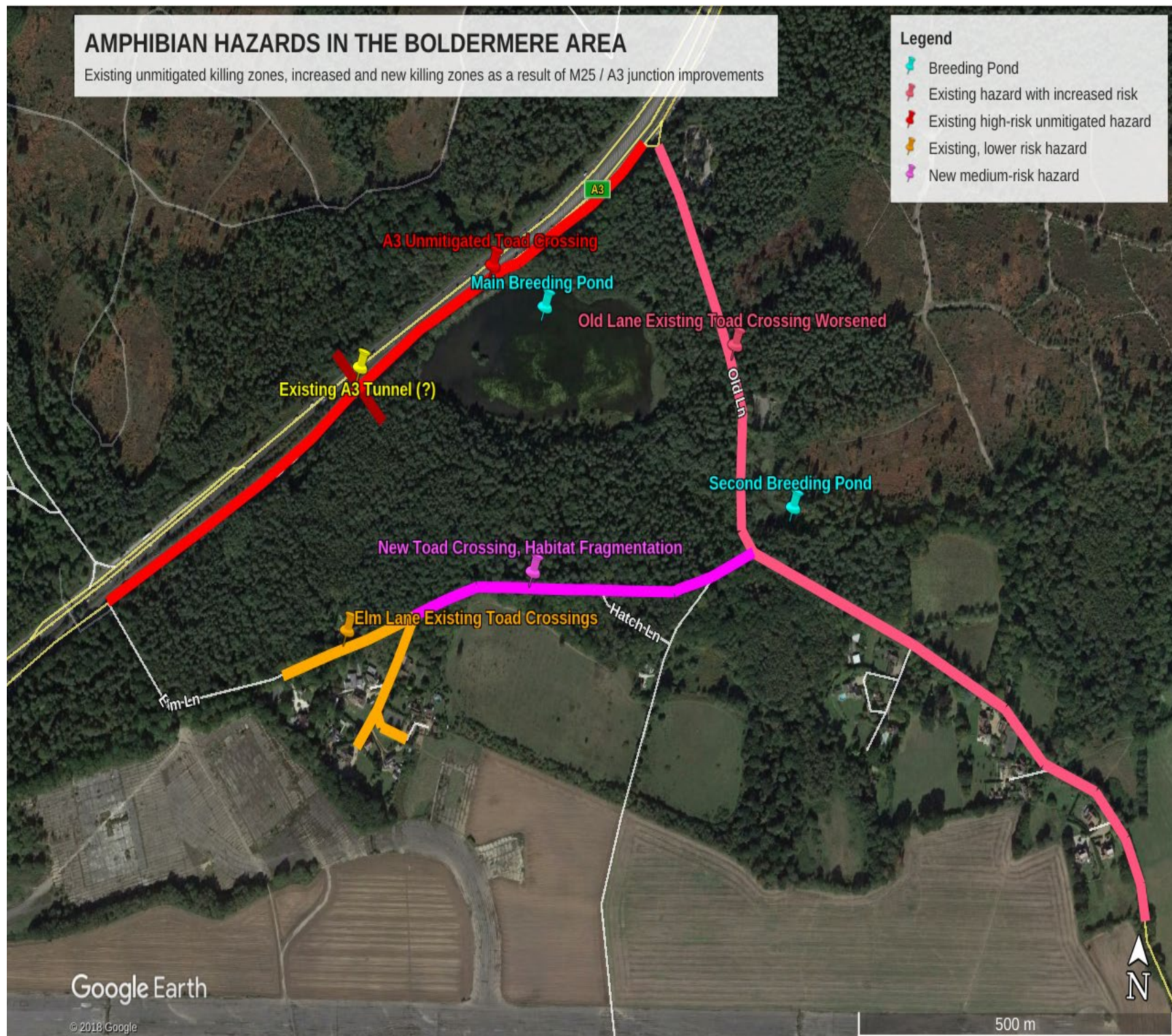
Danger zones old  
and new, explained

The A3 is a historic toad crossing. At present all toadlets dispersing in that direction are exterminated by the volume and speed of traffic, resulting in significant decimation.

The new part of Elm Lane dissects habitat.

Quieter roads present a different type of hazard. Amphibians move onto them on wet nights. Just one vehicle (for instance, a grocery delivery van) suffices to wipe out a very large number of them.

Old Lane is already responsible for many amphibian deaths and is set to become worse as traffic doubles.



## **BOLDERMERE A3 / OLD LANE**

Entry of existing A3 tunnel, Boldermere side

Photo credit Dominic Greves



## **BOLDERMERE A3 / OLD LANE**

Entry of existing A3 tunnel, Wisley side

Photo credit Dominic Greves



# Proposed Mitigation

- Tries to incorporate the following:
- Address the neglected area of the A3 toad crossing
- Propose a solution for Old Lane
- Provide mitigation for the new road (Elm Lane) because:
  - What was previously the last safe direction of dispersion to the south of Boldermere

# BOLDERMERE A3 / OLD LANE

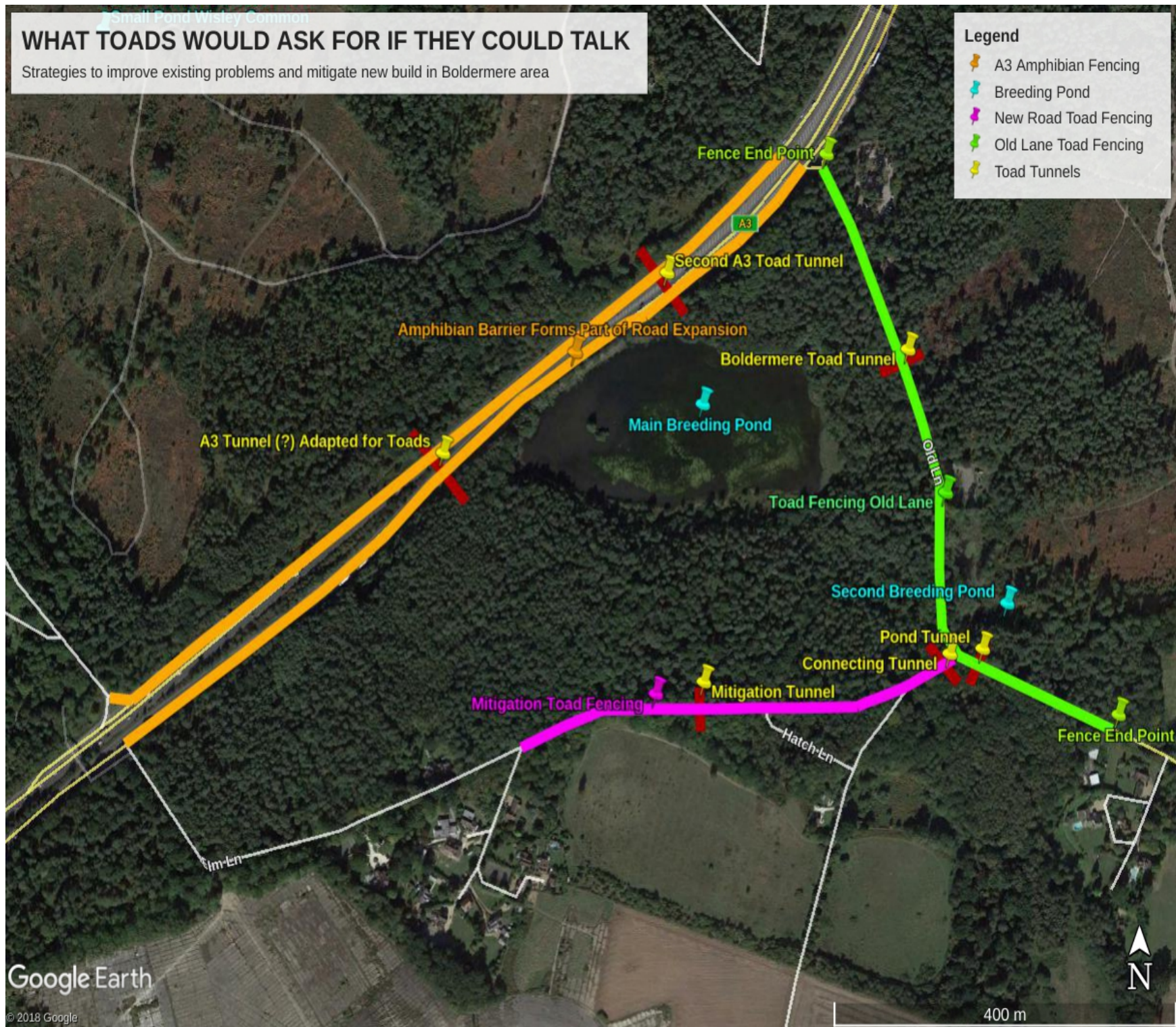
Strategies to reduce amphibian deaths

The existing A3 tunnel is not exactly known. Could it be adapted for amphibians? In combination with fencing along the A3 this would be an effective measure to prevent deaths.

In order to allow toads to move freely to their breeding ponds and summer habitat, there should be a system of two underpasses in Old Lane together with a connecting tunnel at the top of the new road.

An tunnel under the new road would mitigate for habitat dissection.

Fencing on both sides of the road would guide the amphibians to their tunnels

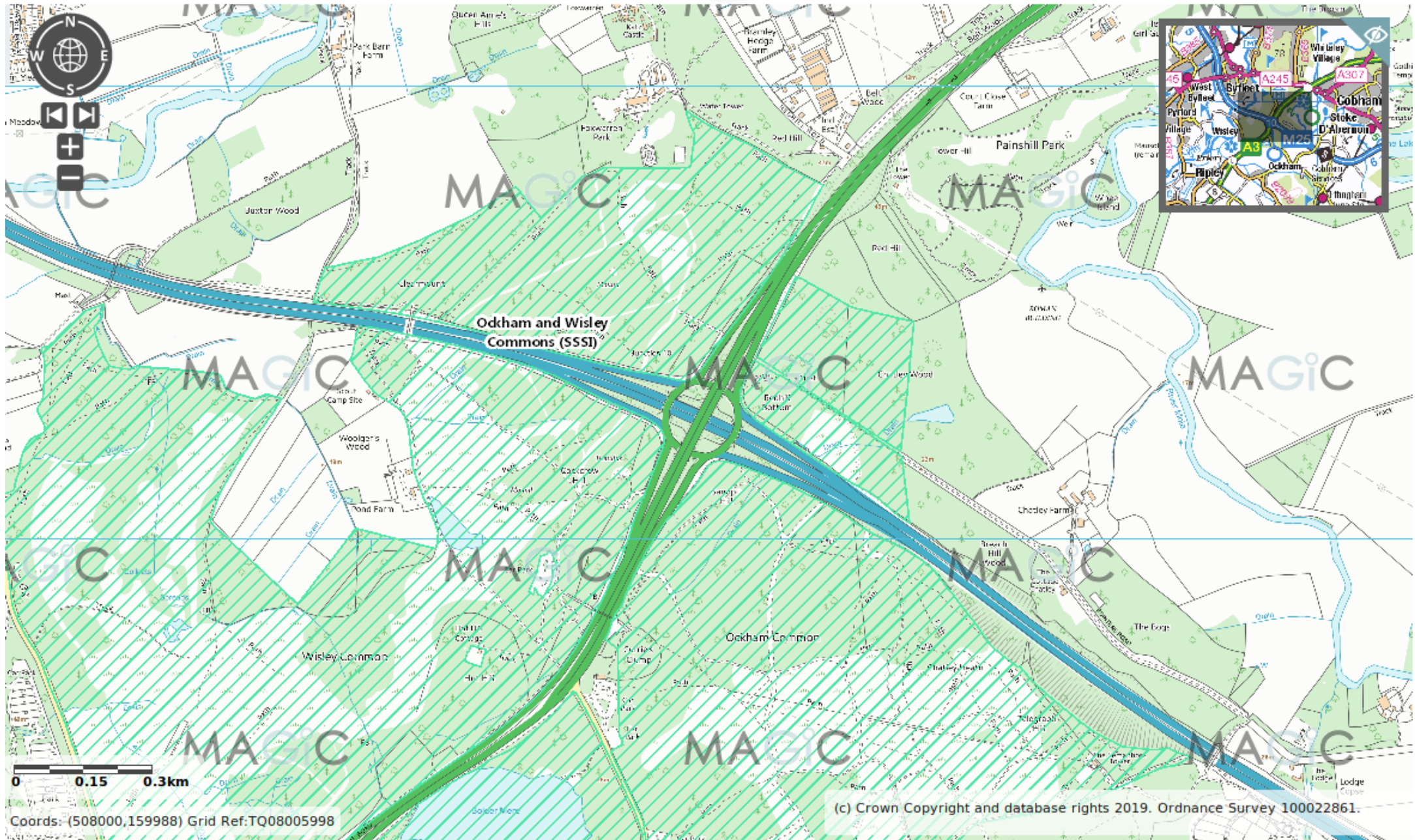


# ADDITIONAL COMMENTS

- Apart from killing toads the A3 prevents dispersal of amphibians between ponds on Wisley Common (500m north and west of Boldermere) and Boldermere, as well as reptiles
- Fences and tunnels on A3 will need annual maintenance by Highways England to ensure the fence is not engulfed in vegetation and the tunnels

# M25Jnct10 Green Bridges

Fragmentation of the SSSI (indicated by the light green hatched areas)





# M25Jnct10 Green Bridges

Reptile surveys Ockham Common / Chatley Heath

