Closest Entry Point

Testing and Explanations

Select Next Destination

⚪ 🚩 Fort William

🔵 ➡️ Closest Entry Point

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V2.90 of Software finally has a good solution.

The Version 2.90 release of the software seems to have fixed the Closest Entry and seems to be actually finding the point on the route's plotted magenta line which is closest to the bike's position.

What follows are the results of a number of tests on a circular route. The route is shown on the next page, taken from Basecamp and drawn in yellow - starting bottom centre and riding clockwise. It is worth looking at the map and identifying the key points on the map which are numbered in sequence 1 to 14.

The Via Points.

These are points that alert on arrival and which the Zūmo regards as 'must visit' points. I have 5 of these including the start and finish points. These are:

V01 Start, V04 Settle, V07 Hawes, V10 Leyburn, V14 End.

The Shaping Points

These are non alerting points and are placed in between the Via Points to extend the route. In most cases there is always a faster, shorter way to get from one Via Point to the next - if the Shaping Points were to be ignored. There are 9 Shaping Points:

S02, S03, S05, S06, S08, S09, S11, S12, S13 Their names can be located on the map.

The Check Points

These represent each of the tests that I intend to carry out. There are 9 locations and for each test, I will place the bike at one of the Checkpoints and start the route from fresh. When given the option to 'Select Next Destination', I choose 'Closest Entry Point' - and see what happens.

There are 9 Check Points - Ch01 through to Ch09. Each has been selected to tease out whether the feature is acutally selecting the closes point on the route, or whether it is going the fastest or shortest way to the next Via Point or to the next Shaping Point. A couple even check whether it is finding the closest point as the crow flies, or the closest point that can be accessed.

For the tests, routing preferences were set to Fastest Time, and no avoidances were set.

On the Zūmo, once the route has been selected, the entire route can be displayed on the Zūmo screen with Via Points shown as flags, Shaping Points as dots. See image bottom left.

When 'Go→Closest Entry Point' has been selected, the new route map should be displayed on the screen. This shows the position of the bike, the route to meet the original route, and the remainder of the route beyond.

Compare the original route with the route after selecting Closest Entry Point
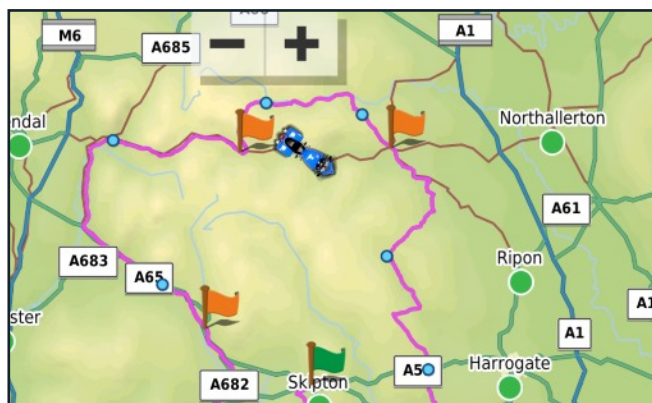
The Zūmo map of the original route with the position of the bike shown near the top of the screen, about half way round the route.

The Shaping Points are blue circles. The Via Points are flags.

*The Via Point to the west (left) of the motorcycle is the closest **route point** to the motorcycle, but the magenta line gets closer about a mile to the east of that point.*


The Zūmo map showing the route after 'Closest Entry Point' has been selected. The new route heads to the nearest place on the original route and continues with the remaining sections from that point.

Note that it meets the closest point on the route and is not tempted to visit the Orange Via Point (indicated with a black arrow) which was a mile further west.

CEP - The Test Route
An explanation of the route and the route points used.
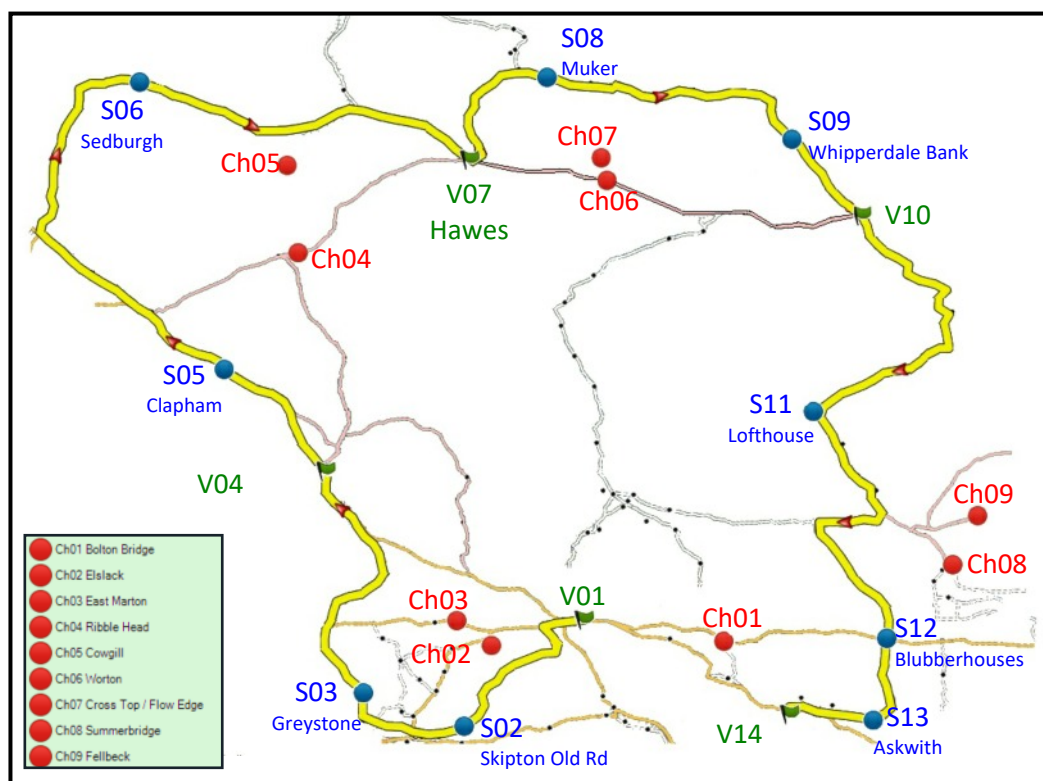
The yellow route has been carefully planned to include many different situations, and has 5 Via Points and 9 Shaping Points. The route starts at V01 at the bottom and progresses round the 140 mile circuit in a clockwise direction.

Key to Map Symbols:

Via Point   ● Test Check Point   🔵 Shaping Point   🟨 Original route

About the Testing.

I set out with the hope that selecting Closest Entry Point will calculate a route from the current position of the motorcycle to a point on the route that is the closest.

I have located check points to try to deliberately entice the CEP function to aim for:

- The nearest Via Point
- The nearest Shaping Point (created first as a Waypoint)
- The nearest Shaping Point (not created as a Waypoint)
- The nearest section of the route
- To head 'against the flow' of the original route

All of the tests were carried out with the Zūmo XT GPS system turned off, and setting the location of the bike to the location of the check points Ch01 to Ch09. Setting a simulated position is perfectly acceptable as a test. The Zūmo does not need a GPS signal in order to calculate a route. It just needs to know where the bike is. And simulation does that perfectly adequately.

I then use Trip Planner→Saved Trip→(Trip name)→'Go!'→Closest Entry Point→Ok - in the normal way.

The Zūmo map then reveals the route that has been calculated from the current position and shows the Shaping Points and the Via Points that remain from the original route - as shown in the example on the previous page.

A Reminder about some key definitions.
Waypoints, Via Points and Shaping Points - Garmin's Definitions - and the ones that I use.

By now, many people will be sick of me repeating this. But this is really important information.

Waypoints

are locations or landmarks that are recorded and stored in your Garmin outdoor device (*and Basecamp*). These are locations that you may later want to return to, such as your vehicle or a waterfall. They may also be significant points or features you found during your activity, such as a camp, a fork in a trail, or a favourite fishing spot. Link

Shaping Points

are any position along a route that will not alert you when you arrive. Shaping Points do not contain arrival time or distance between points information. Link.

A Via Point

"… an intermediate stop that you can add to your route on the way to your final destination". On the XT Via Points will announce on approach and arrival. Data display updates progress towards the next Via Point. Link

When a Waypoint (or Favourite) is added to a route, it becomes a Via Point by default, but it can be changed into a Shaping Point by making it so that it does not alert on arrival. This is usually done in Basecamp before the route is transferred to the Zūmo XT. My observations seem to suggest that Shaping Points created in this way also retain their properties as Waypoints.

Incidentally, if you change a Via Point to a Shaping Point on the Zūmo screen, beware. The Zūmo will quite possibly change its location and rename it. This fault has been reported to, and has been acknowledged by Garmin and hopefully they will fix this issue in a later release of the software. It is still present in release 2.90 of the XT software and is also present in the last release of the Zūmo 595 software (4.60) - as of 28 Aug 2020. It is not present in the last release of the 590 software.

The following section performs the tests for each of the 9 checkpoints in turn, showing the relevant section of the original Basecamp route, the XT screen showing the route that it has chosen to get to the closest entry point, and the Shaping Points and Via Points remaining left to visit.

History of Testing of the Closest Entry Point feature after receiving my Zūmo XT in April 2020

My XT came with version 2.30 of the software, and one of the first things I did was to try to work out exactly what selection of Closest Entry Point actually did. From those early tests, it seemed to be that the chosen place to join up with the magenta line was always to get to the nearest Via Point. So it seemed to be a way of automatically choosing the answer to the 'Select Next Destination' prompt when starting a route. This worked but it was a bit disappointing from my point of view.

With each subsequent release - the software appeared to have been updated and the behaviour when selecting CEP seemed to change. With one release it was improved to include the selection of Shaping Points as a next destination - but only if it had been created as a Waypoint first. It suggested to me a misunderstanding in the type of routing points that Garmin had defined. Another later release any Shaping Point or Via Point regardless of how it had been created seemed to be targeted. I made test routes which passed within a mile of the current location, but in my tests it would reject the nearby route section with no routing points and for a via or Shaping Point deliberately placed a few miles away in the opposite direction.   It was heading for the closest route point rather than the closest place on the route.

In one test that I repeated in a few locations, the closest point on the route was obviously at a junction. To continue on the route would require it to turn right. I put a Via Point a mile down the road to the left. It was obvious from these early tests that the Zūmo would head for the Via Point, then turn round and go back along the route, and past the same junction.

Occasionally, my XT would do something really weird and head for a point hundreds of miles away before it joined the plotted route - ignoring closer points and any via, shaping or way points in between. It wasn't until much later that I discovered the reason for this.

V2.90 the XT's software was a massive improvement. It seems to find the closest bit of the magenta line that is anywhere on the route to the SatNav's current location, and heads for that. It passed the test for for choosing the right decision at the junction - preferring the direction of the route to any Via Points or Shaping Points that I placed to tempt it. And it found the closest point of the route, even if there were no points other than start and finish. Previously, the CEP function would ignore the route and head for the finish.

V2.90 seemed to be working - but because of my previous observations, I tried to tempt it with route points placed just off the way to the actual closest on the route, and with points that had been created as Waypoints first. But it refused to be caught out any more.

Then an issue with the 2.90 software revealed itself. Sometimes when setting off near to the start point, and selecting Closest Entry Point as the next destination, the XT would take me back to the start. Or it would take me miles in the opposite direction. I puzzled over this for ages trying to reproduce the circumstances. But the behaviour seemed to be random - until I remembered that I had seen this before when it generated a Trip of a few hundred miles. Why didn't it just turn round ? Ting !! Light bulb moment.

So I tried something. v2.90 worked perfectly well in all of my tests if U-Turns were allowed. In some circumstance when U-Turns are not allowed, it would go wildly wrong or report that it was unable to calculate a route at all. There can't be many of us that take any notice of a satnav's instructions until we are well clear of our overnight parking spot. It doesn't know which way it is facing !!

At present, I strongly recommend allowing U-Turns for using the Closest Entry Point feature.

Closest Entry Point Test: Ch01 Bolton Bridge Before Starting the Route

Before Starting the Route - Will it start the route if the end point is closest ?

The checkpoint was placed deliberately closer to the end of the route at V14 Ilkley (bottom right) than it is to the start of the route at V01 Skipton (top left). The checkpoint - Ch01 Bolton Bridge - is in between the two, closer to Ilkley.

The cyan route heads off from Skipton on the left and follows a 200 + mile circular route in a clockwise direction. On the map below we see it heading off the left hand side of the image, and 200 miles later it appears back on the right hand side.

The Check Point is set at Ch01 Bolton Bridge - outlined with the red rectangle.

First Test.   Bike located at Bolton Bridge.

With Current Position set at Bolton Bridge, the route headed towards Skipton - the actual start.
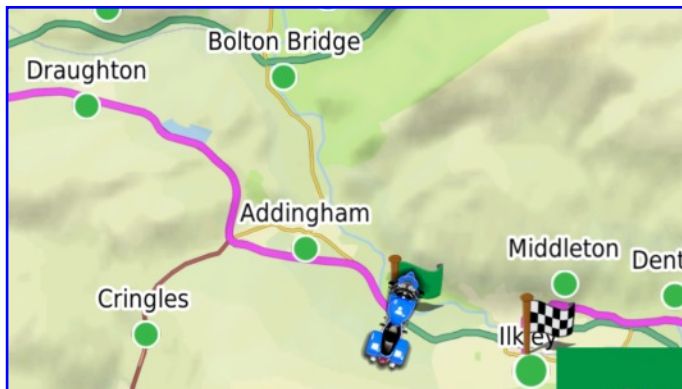
I tried the same test with the bike positioned in Addingham - very much closer to Ilkley. It still headed for Skipton at the start as shown in the screen shot on the right.

Still not convinced, I moved the current position a couple of hundred metres from the end flag. It still opted to head for the start in Skipton.

Result

So that is a good result. If the location of the bike is before the start of the route, it heads for the start, in spite of the fact that the closes point to join up with the route is near the finish line.

Footnote

Some time later, I came back to this scenario after encountering problems with other routes. I eventually discovered that the results of choosing Closest Entry Point can sometimes be affected by the setting for 'U' turns, so I came back and tried this test again.

Conclusion

I don't know this for a fact, but I can surmise from my own observations: If 'U' turns are not allowed, choosing Closest Entry Point can sometimes result in the route heading straight for the finish flag 200 metres away. Trip over. That was quick !!
In tests, this behaviour seemed to be random. Sometimes it headed for the start, sometimes it headed for the end.

It turned out that if U-Turns are allowed, there are no such problems (so far !)

The issue seems to be due to the small positional errors (a few metres) that occur when the Zūmo obtains a satellite fix.   Turn the XT on, show the map and put it on your desk. Show the data display with GPS Accuracy showing in one of the displays, and direction in another. See what I mean ? Because each fix has a different small error, the SatNav thinks that you are moving, and it works out which way it thinks that you are facing. If it thinks that you are facing away from the direction it needs to go, and you do not allow U-Turns, it will end up with a very long route - or perhaps - head for the closest point in the direction that it thinks you are facing.
Actually, the XT seems to settle down and shows no movement at all after a while. But by the time it realises that you are in the same place it has already worked out (incorrectly) which way it thinks that you are facing. And who's to say that you're not facing the wrong way anyway ?

Suggestion

Always allow U-Turns - if using Closest Entry Point

Will it go for the Via Point, or something closer ?
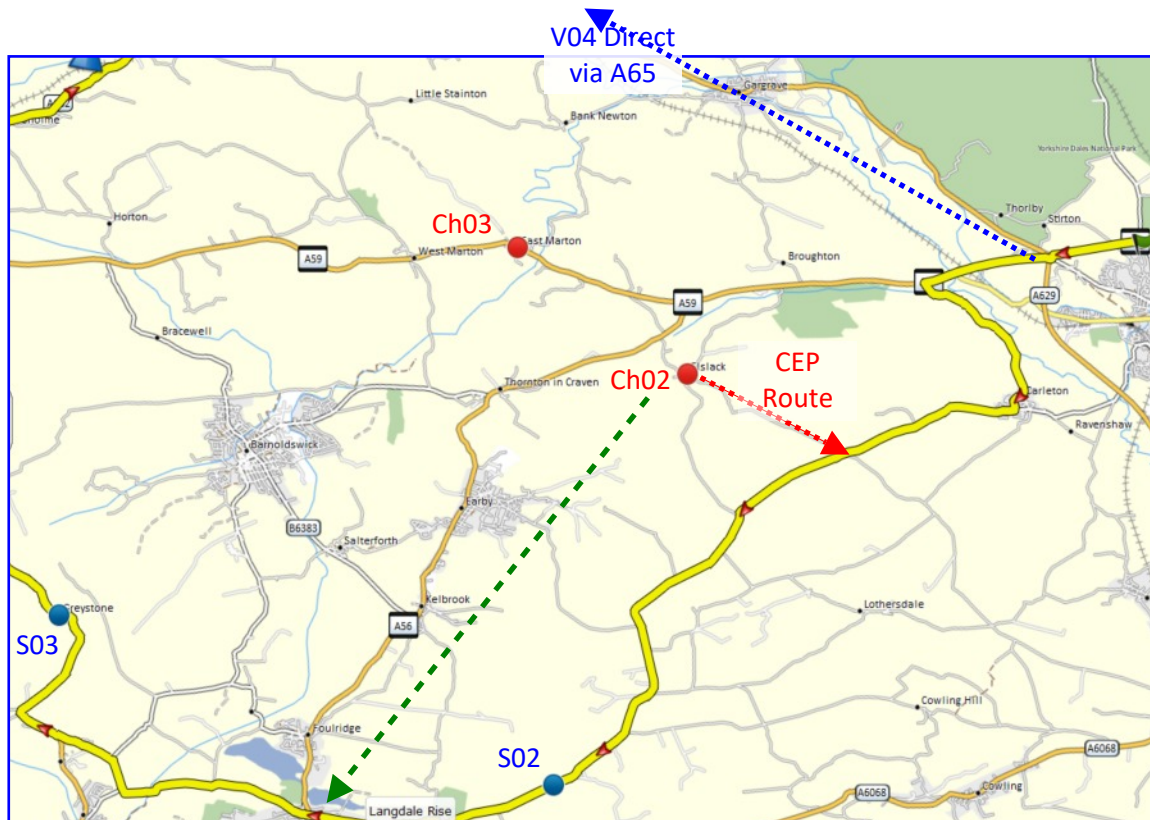
- Ch02 Elslack is positioned on the north side of the planned route.
- The First Via Point is at V04 Settle, 13 miles NW along the main A65 - shown above by the dotted blue line.
- S02 Skipton Old Road is the closest Shaping Point.
- The shortest distance to the yellow route is SE from Ch02 (red)
- The most efficient point is to the SW where the A56 meets (green).

Result

CEP plotted a route from Ch02 Elslack to take the shortest route to the original route, and meets it at the orange circle. It then follows the original route through S02 and S03.

Comment

The bike was located at a fork in the road, the line of the second road is marked on the screen shot map with a black dotted line. This would have been a shorter distance to reach S02 - the blue circle - but the distance to reach the planned yellow route would have a bit been further.

Perfect. It headed for the closest entry point marked with the orange circle on the screen shot and the red dotted line on the map above.

If it had been trying to head for the nearest Shaping Point - as had been the case in an earlier version of the software, it might have taken the road indicated by the black dotted line.   The route it has chosen is definitely the shortest route to join the planned route.
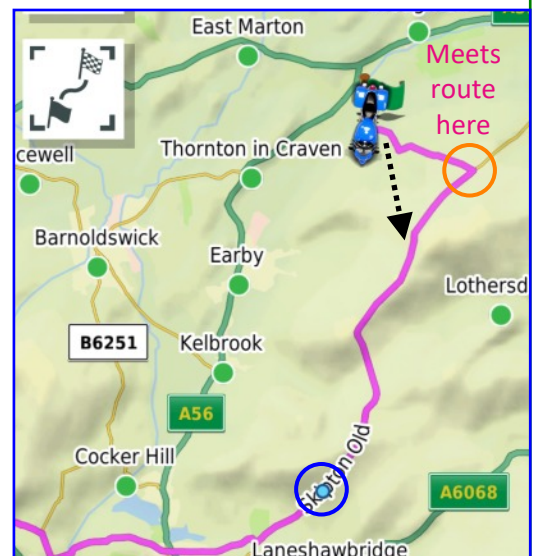
Which route will it take ? There are 4 to choose from.

Pic 1: Closest Entry Point options from Ch03

Pic 2: CEP Heading west to Gisburn ??

Out of the 4 possibilities that I imagined the XT may take - suggested in Pic 1, the XT produced two different results on different tests.   Pic 2 shows the CEP chosen by heading west to Gisburn. Pic 3 shows the actual closest point of entry to the east of the bike.

So why are there two different results ?

If you think about it, it is pretty arbitrary how the SatNav works out which way you are facing when you are standing still. It will constantly calculate your position, and it determines the way you are facing by which way it thinks you moved last. But you haven't moved. So it is down to slight variations in the positional fix of the SatNav. If these are 1m apart, then it thinks you have moved. And if it thinks you have moved away from the route, then you are facing away from the route. And if you do not allow U-Turns, then it may have a long way to go before it can get back to be facing the other way.

Pic 3: Actual Closest Entry Point

So finally I worked out what had happened. In between the two tests, I had change the 'avoid U-Turns' settings. So I repeated the exercise to verify.

The Red route (Pic 2) is what I got first of all when I opted to avoid U-Turns.

With U-Turns turned off, the SatNav always calculated the route east - shown in Pic 3.

Conclusion

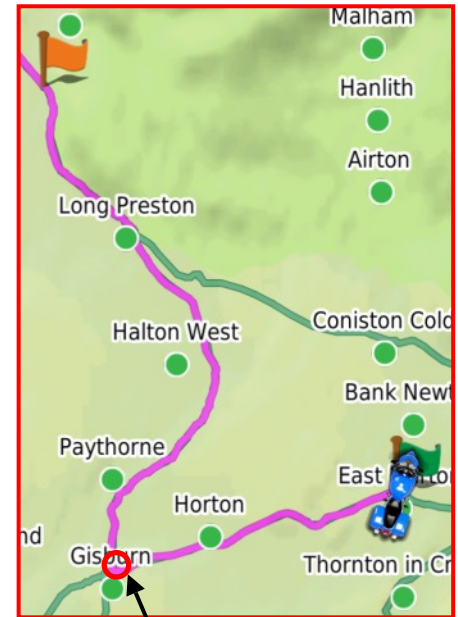Closest Entry Point heads for the location where the magenta line is closest.
It made no attempt to get to the next Shaping Points in the sequence.
The main part of the route is west and south - but it turned east and selected a point that it must have already passed.
CEP does what it says - heads for the place on the route that is closest to the location of the bike

Suggestion

If you intend to use the Closest Entry Point feature. Turn off the 'Avoid U-Turns' option.

The Closest Route Point or the closest part of the route ?

Pic 1: From Ch04, some interesting possible routes can be identified.
CEP chooses the green arrow route heading SW to Ingletons - see text

The bike is located at Ch04 - Ribblehead.

Being at this position offers some very real and distinct possibilities:

- SW to Ingleton is 7 mile, 9 mins away and is the closest that the route comes to the bike.
- NE to the Via Point at V07 Hawes. This 9.8 miles and 10 mins away. This is the closest Via Point.
- NW to S06 Sedbergh is 15.6 miles, 24 mins away. This is the first route point that it could reach from Ch04.
- S06 Sedbergh could also be reached Via Ingleton - but this way is further at 24 miles, 31 mins

This is quite a good test of whether the CEP function really does select the closest part of the route - or whether it heads for a routing point like it seemed to in tests with early versions of the software.

This test suggests that it does now ignore those two tempting offers and heads straight for the places where the route is closest. Even if it means heading to a location that is closer to the start of the route than it is to the finish.
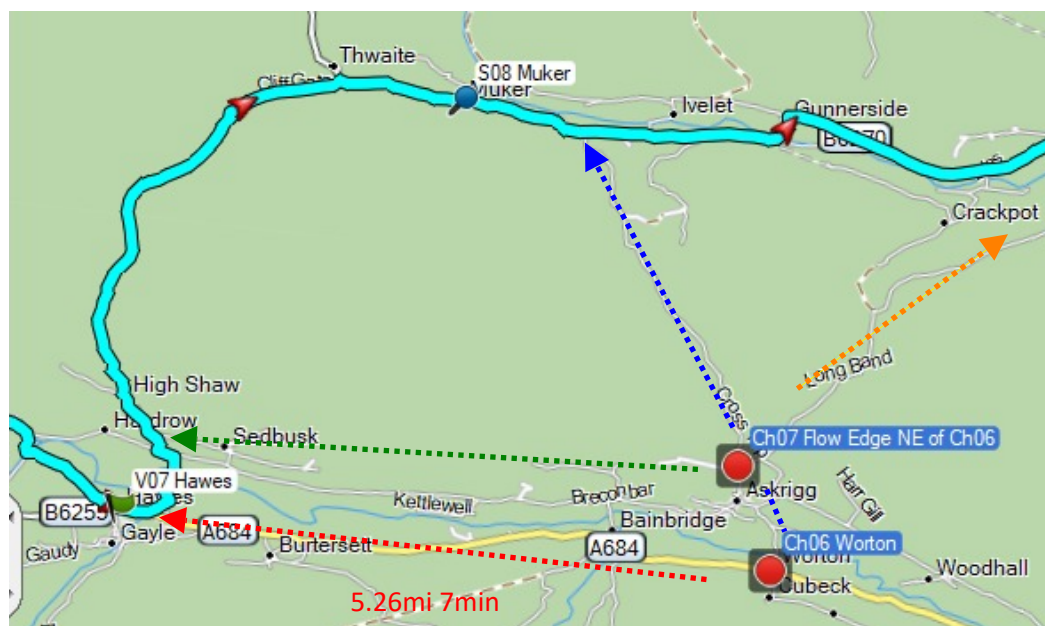
Conclusion

The only conclusion is that it has found the closest place on the route at Ingleton - as shown on the screen shot on the right.

If it was heading for S06 Sedbergh, it would have taken the shorter and quicker option shown on Pic 1.
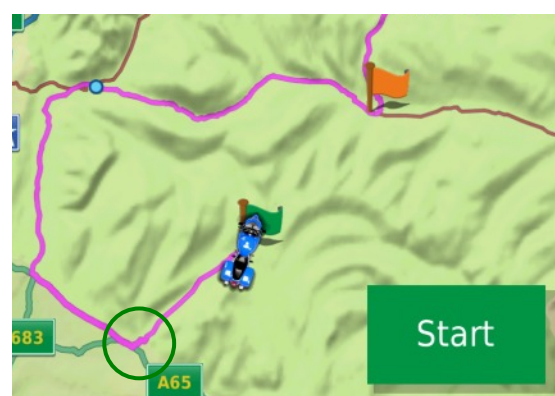
Pic 2: Screen shot of XT map
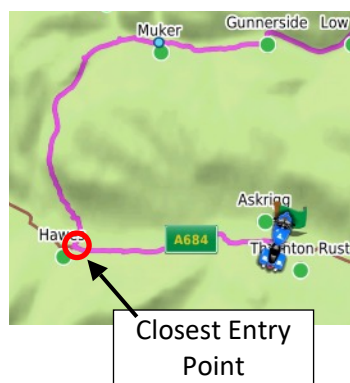*After Closest Entry Point has been selected.*

Two more tests to tempt 'Closest Entry' to head for a route point

Pic 1: CEP - Possible candidates for Ch06 and Ch07

Ch06 Worton.

From Ch06 Worton, there are two possibilities. Each option has a very tempting route point which is just before where the closest entry point would be.

Closest Entry Point

- The dotted red line west (5.26mi) to join the planned route at Hawes. (Possibly tempted by V07 Hawes - which is just before where the red route would join the plotted route)
- The blue route NNW (5.62mi). (Possibly tempted by S08 Muker)

Result:

The SatNav takes the route to the actual closest entry point, where the planned route turns north near Hawes. It does not visit the V07 Hawes Via Point, and consequently the V07 Hawes Via Point flag is not shown on the route displayed on the XT screen *(image left)*.

Ch07 Flow Edge - *refer to Pic 1 again*

From Ch07 Flow Edge, there are two similar possibilities:

- The blue route NNW again (tempted by S08)
- The green route west (tempted by Hawes)

This time, the blue route is only 0.3 mile shorter, but I hope the Zūmo will take that. The question is whether it will head for the S08 Muker Shaping Point.

There is a 3rd option marked by the orange arrow on the top map, heading to S09 as the closest routing point.   If a separate route is created using Ch07 and S09 as the only two points, this is the route that the SatNav calculates. But it is not the shortest or the quickest way to meet up with the cyan route.
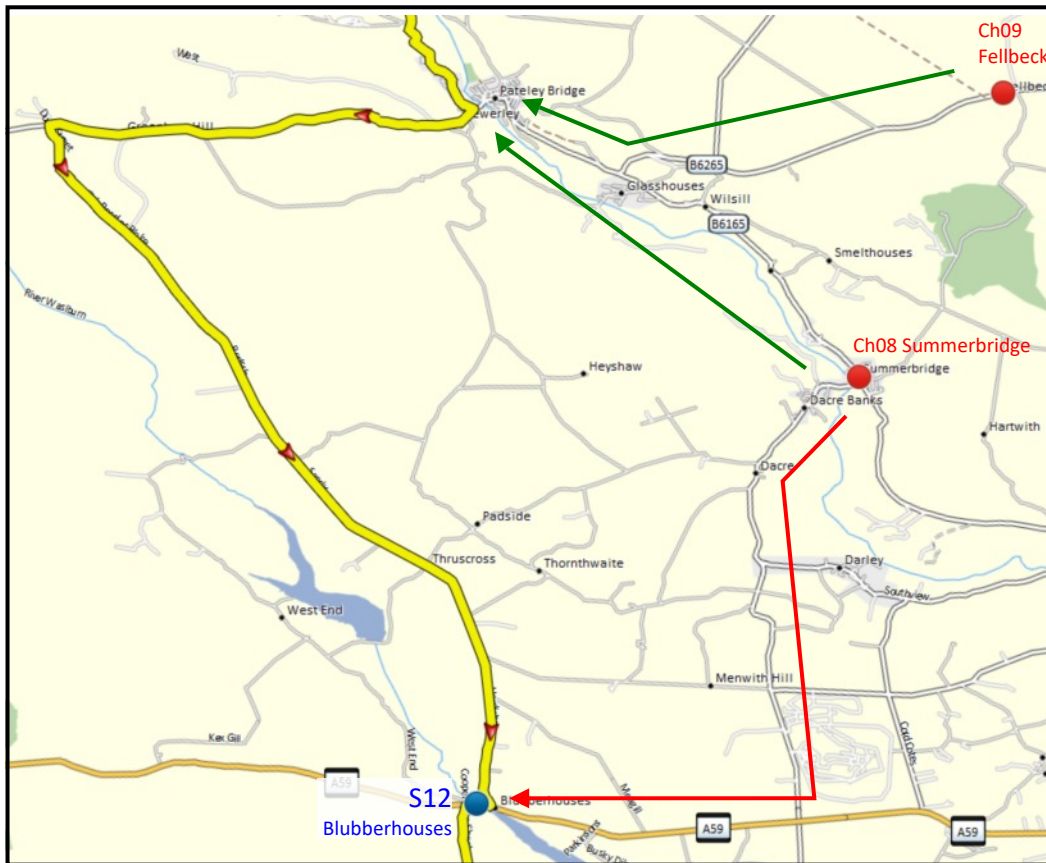
The Zūmo screen (left) shows the chosen route. It takes the shortest dotted blue route, and does not bother heading for S08 Muker just up the road to the west.

Closest Entry Point

Result:

This is clearly aiming for the closest point on the route - not for the nearest Shaping Point or Via Point.
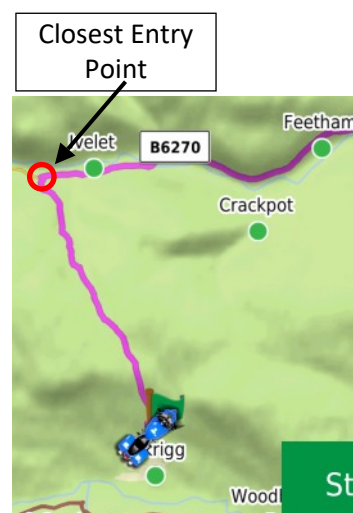
The Clincher - Closest Entry Point or Closest Routing Point ?


*Pic 1: Possible candidates. Pately Bridge is the closest point to both Ch08 and Ch09.*

The original yellow route comes from the north, through Pateley Bridge, climbs a steep hill and then turns SE along a fast open moorland road to S12 Blubberhouses. This is the quickest, most direct and most scenic route.

The two location checkpoints are deliberately positioned to the east. The shortest distance from both points is clearly at Pateley Bridge - which is where the green arrows point. The red route from Ch08 Summerbridge must be tempting - it is the fastest way to get to the next Shaping Point - but we have tempted it with that scenario before.

Two of the many results that I obtained are shown below. In Pic 2, the orange circle shows the Closest Entry Point at Pateley bridge. In Pic 3, the red circle shows where the CEP should choose to go, but the route has clearly headed south to Blubberhouses. Something is wrong !
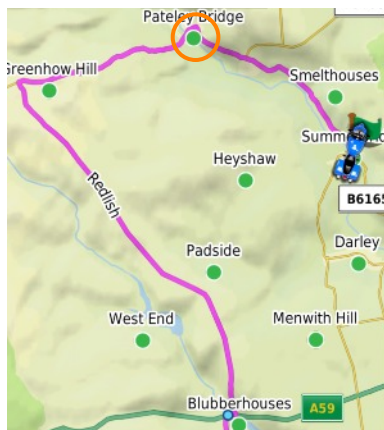
Pic 2: Correct routing to CEP from Ch08 Summerbridge
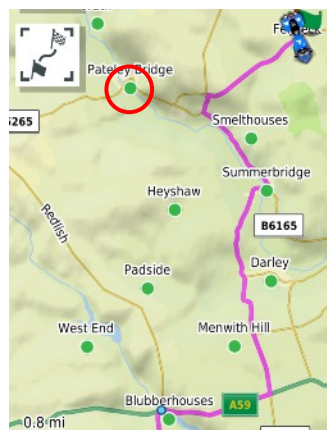
Pic 3: Incorrect routing to CEP from Ch09 Fellbeck

This turned out to be the first time that I had encountered how the 'Avoid U-Turns' feature affected the calculation of the Closest Entry Point.

I I got a whole assortment of inexplicable results, until I turned on the option to allow U-Turns.

The reason I obtained 'random' results is that the SatNav was not moving at the time I selected 'Closest Entry Point'. It occasionally had me facing in the wrong direction. With U-Turns disallowed it had to find the CEP by heading in the wrong direction ! That is my explanation anyway.

V6.10 of the software may have fixed this issue. Check the map. Allow U-Turns if CEP produces odd results.

Result:

The correct result is obtained and it finds the closest entry point at Pateley Bridge - if in the Avoidances menu, U-Turns is un-ticked - ie set to 'Allow'.

Suggestion

Check the map after selecting CEP. If the result looks odd, set Avoidances to allow U-Turns and try again.