The Zumo 660 Routing Behaviour

Garmin Zumo 660

Observation on Routing Behaviour

Photo Taken 2 March 2012
Cam High Road / BeggarMan's Road, Near Hawes, North Yorkshire.

N 54°15.802' W 2°12.7333'

Please remember when reading this that satnavs have moved on, and some of the terminology used in here is now at odds with the way that it is used now.

For example - a Via Point on a Zumo 590 and on Basecamp is a point on a route which will alert you on arrival.   The Zumo 590 will insist that you visit a Via Point.

The Zumo 660 will not insist that you visit a Via point.

Also note that Garmin has declared that later versions of BaseCamp are not compatible with the Zumo 660. You still need to use MapSource to get predicatable results.

Zumo 660 Maps & Routes

It's interesting to read the various comments on forums about the alleged routing inaccuracies that are attributed to Garmin satnavs. These are not the quirky attempts to get you to drive down the motorway slip road and then immediately rejoin the motorway (because it is a shorter route), but rather complaints I have read abound about problems with Garmin not taking the route that was fed into it; problems with figure of 8 routes; problems with always trying to take you back to a waypoint that was accidentally positioned 10 metres up a side road.

First a bit of information. People seem to use the terms Waypoints, Favourites, Via Points, Shaping Points interchangeably. Example. Add a Way Point to a map and then make it part of a route. When you see the map downloaded to the Zumo, it refers to it as a via point. It is confusing, because I seem to remember the Zumo 550 treating Waypoints and Via Points slightly differently. Some use the term 'Via Point' to refer to points which are created by dragging the route to follow a particular road, whereas others call them 'shaping points'.

So to avoid any confusion, I am going to use my own terms in this article:

Named point: A place on the map which you have located, stored and given a name. Often referred to by Garmin as a Waypoint or as a Favourite.
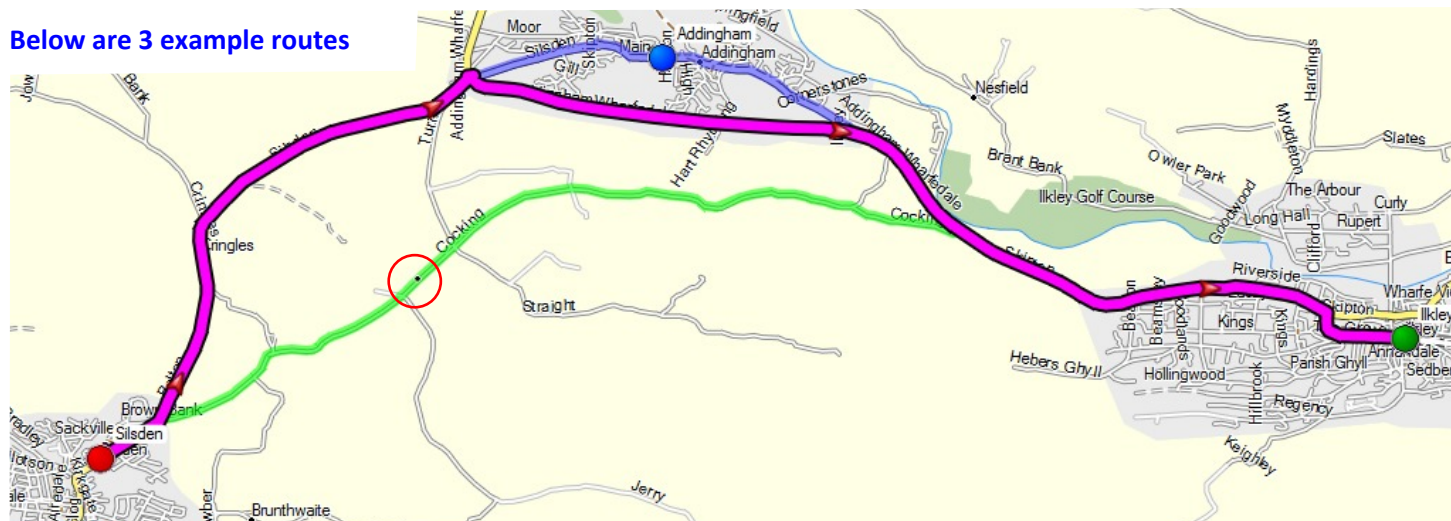**Start & End Points**: Named points at each end of the route.
Mid Points: Any *named* points that you include as part of the route.
Drag point: A nameless point on the map which you have inserted in BaseCamp or MapSource by dragging the route to force it along a particular road.
Ghost Point : It is not possible for you to create a ghost point yourself. They are created by Garmin software to ensure that the route received by the Zumo is identical to the route sent from the BaseCamp or MapSource.

Below are 3 example routes

The Purple Route. **Start** and **End Points** are Silsden and Ilkely respectively. MapSource has created the best route using its routing options (which I can set). Although the actual route consists of only two points, the GPX file which is sent to the Zumo contains 170 additional **Ghost Points**. These make sure that no matter what routing preferences are set on the the Zumo, it will follow the precise route that it has plotted on the map. Garmin refers to these Ghost Points as 'Route Point Extensions'.

The Blue Route. Here I have created a **Mid Point**, saved it with the name 'Addingham' and included the **Mid Point** in the description of the route. So the route is Silsden - Addingham - Ilkley. The software works out the blue route, and it includes 244 **Ghost Points** in the GPX file that it transmits to the Zumo. When navigating, The **Mid Point** (Addingham) shows up on the list of 'turns' and will be spoken by the Zumo voice. The Zumo 660 refers to this as a via point.

The Green Route Has just a **Start** and **End Point** at Silsden and Ilkley respectively. However, I started with a copy of the purple route that MapSource offered, and I dragged a point on the route to force it along Cocking Lane. You can see the little black dot which indicates the presence of my **Drag Point** on the green route. The Drag Point appears in the list of route 'via points' and in the 'Directions' in MapSource and also in the list that is transferred to the Zumo, but the arrival at the **Drag Point** is not announced on the display or by the voice. The Drag Point is also referred to as a 'Via Point' on some Zumo screens. Again, the Ghost Points ensure that the Zumo follows exactly the same route that is plotted on the map.

Ok - so that is a simple example of what happens when everything is working as it should. Now read on to find out why I believe that some people think that the Garmin Zumo 660 doesn't behave properly with their routes.

Reason 1   BaseCamp/Mapsource does not have exactly the same version of the maps installed.

If the identical map version is not installed, then it is quite likely that some of the ghost points created by the software on your PC do not correspond exactly to locations on the road by your Zumo 660 . Having missed the ghost points, the Zumo software thinks you have gone off course **and recalculates the entire route**, using its own routing preferences and ignoring any future ghost points that it had received from Mapsource/BaseCamp. Since the ghost points were put there specifically to ensure that the route on the Zumo matches what was put into MapSource/BaseCamp, the route will now be different from the one that you intended.

Solution: Make sure that the maps are the same versions.   Your Zumo 660 will tell you if it has to recalculate the route because of this - providing that you have not turned off this option.

Reason 2   You didn't use MapSource / BaseCamp in order to calculate your route.

Using other software to plan a route is perfectly OK, but the chance of getting the exact same route as your Zumo is not guaranteed. (See 3rd map at the bottom of Page 6). Programs like Google Maps will create a route with its own Ghost Points to force the route to follow a particular path. However, these seem to be arbitrarily positioned.

Crucially, the mapping that is used to create the route isn't precisely the same as the one in the Zumo 660 , so a point that was on a road in (say) Google Maps may be slightly off route on the Zumo map or slightly up a side road.   Both of these situations may force the satnav to recalculate the entire route, or divert you up a one way street.
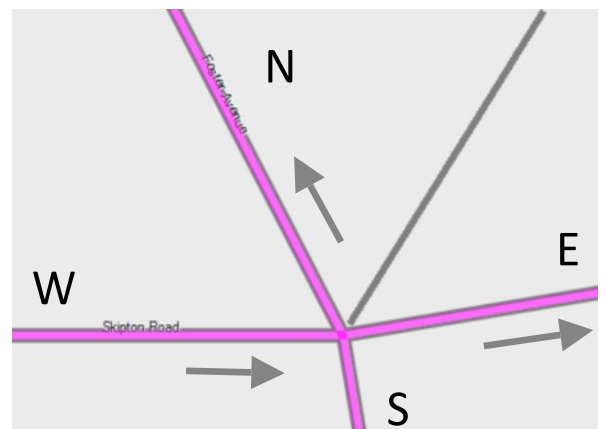
Reason 3   When navigating, you go 'off route'.

It doesn't matter which software you use to create the route, if you go in a different direction to the one that Zumo has plotted, it no longer has any Ghost Points to follow. It will be forced to recalculate a route from where you are now to the next **Mid Point** or **End Point**. But it will now use its own rules to find the best route. So even though there is a purple route to follow on the screen, this is no longer the one that you originally plotted.   All that the Zumo is interested in is getting you to your next Mid Point or End Point, by whatever route it now calculates.

The good news is that as soon as you arrive at the next **Mid Point** on the original route, the Zumo 660 will pick up the original route and continue as if nothing had happened.

The above scenario is easily verified by plotting a figure of eight route and observing what happens at the cross roads where the route crosses over itself. No matter where you have placed your Mid Points, the Ghost Points will correctly force the satnav to take you across the junction along the correct route. Eg - in the diagram, the plotted route starts from the south, crosses the junction going north, takes a left hand loop and then approaches the same junction from the west and heads off eastwards.

At the junction, the satnav will always direct you to take the road heading North, even though it has just crossed the West East route.

However, if at the junction you decide to *deliberately* take the wrong route - eg by turning right (East), the satnav will not complain. You should have gone North, but it will pick up the West-East **Ghost Points** after a hundred metres or so, realise that you are on the correct route and continue to navigate from there. It will do this, even if you had intended to visit half a dozen **Mid Points** after the cross roads. By deliberately going East, you have missed out these **Mid Points** and picked up the original route at a later stage, and the Garmin doesn't care.   If you then realise your deliberate error, turn round and head up the North branch, the Garmin will resume its original course and take you via the half dozen   mid-points, as originally intended.

If however you took the dark grey side road heading north-east, that would be different. You have gone off the route, and all the satnav can do is try to recover by calculating a brand new route, using its own rules, to your next plotted **Mid Point**. Now the satnav shows a brand new purple route which no longer follows the ghost points which were set out in the original map on the PC. It will pick up the original route at the next **Mid Point**.

Some Golden Rules.

Never create a circular route. You will reach the **end point** as soon as you set off, and the Zumo 660 will stop its navigation. Instead, put the start point half a mile up the road. The Zumo 660 ask if you want to Navigate to the start point. If you say 'No' the route will still become active but it won't start issuing instructions until you reach the actual start point or you meet up with the magenta route.

If you say 'Yes' to navigate to the start point. The Zumo 660 treats this request as a separate route, and when you get to the start, it will stop navigating ! You will have to re-select the intended route.
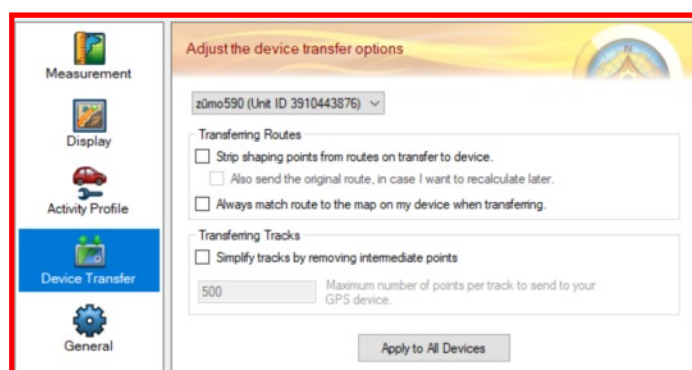
If you imported your route from a non-Garmin mapping utility, the ghost points will not work as they do with the Zumo. Subsequently, if the route is recalculated (you get a message on the screen), you will have lost your original route. Best thing to do is to stop navigation, and select the route again. This will put the correctly plotted route back into the satnav.

The above is also true with **Mid Points** imported from Google Maps.

If your Garmin says that the route was calculated with a different version of the map, then check that all of your **Mid Points** have been put into the newly calculated routes. Note also that the Garmin will use its own settings (eg shortest distance / fastest route) rather than the ones that you set in Mapsource or Basecamp when you first plotted the route.
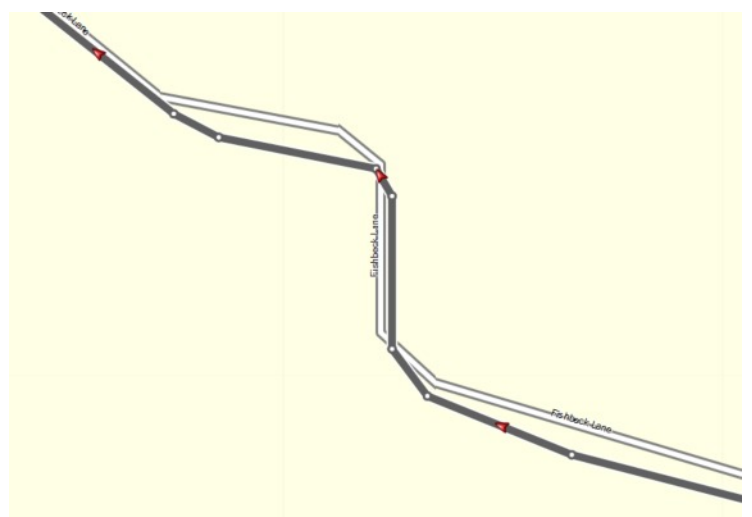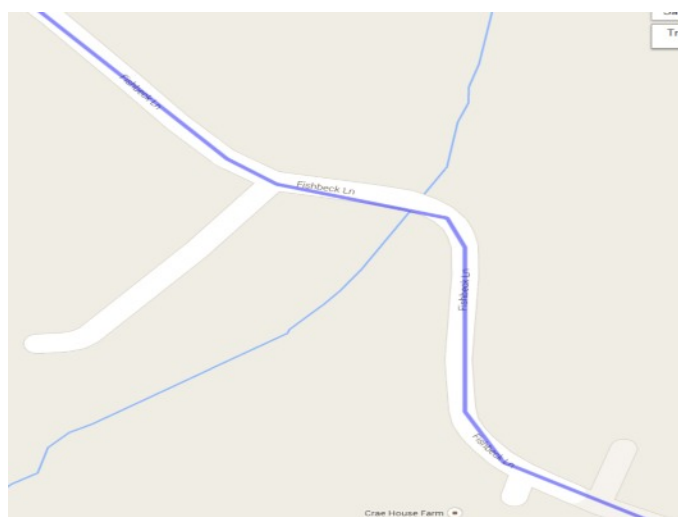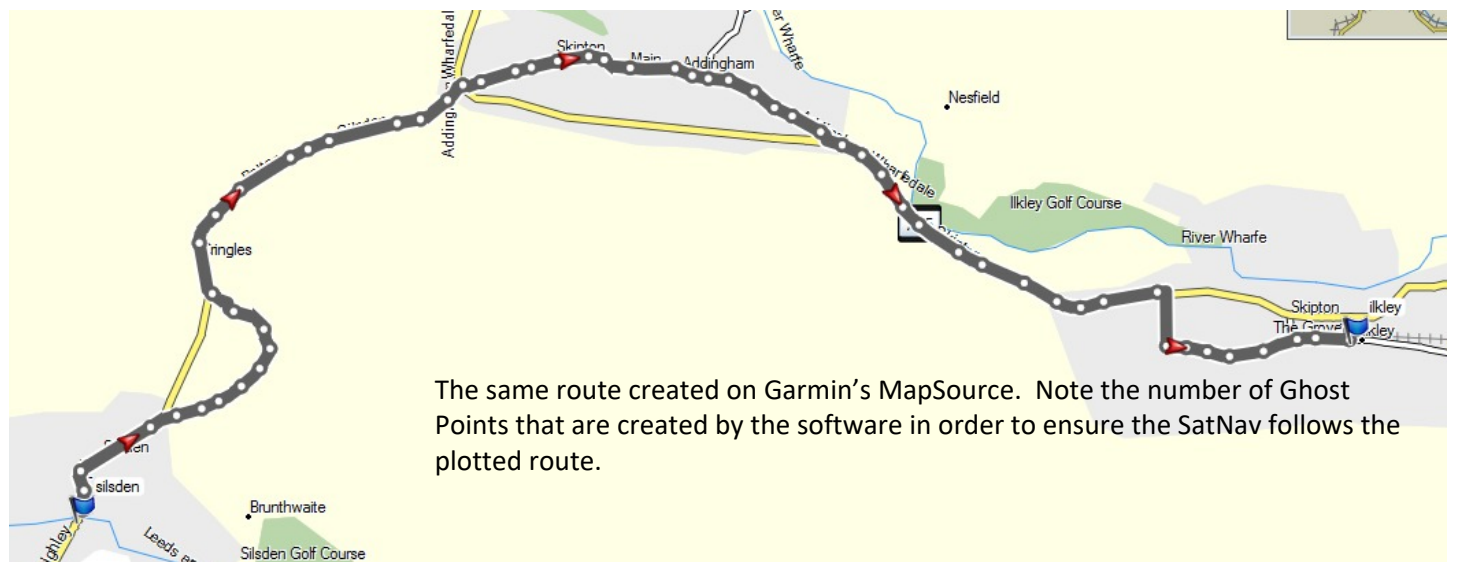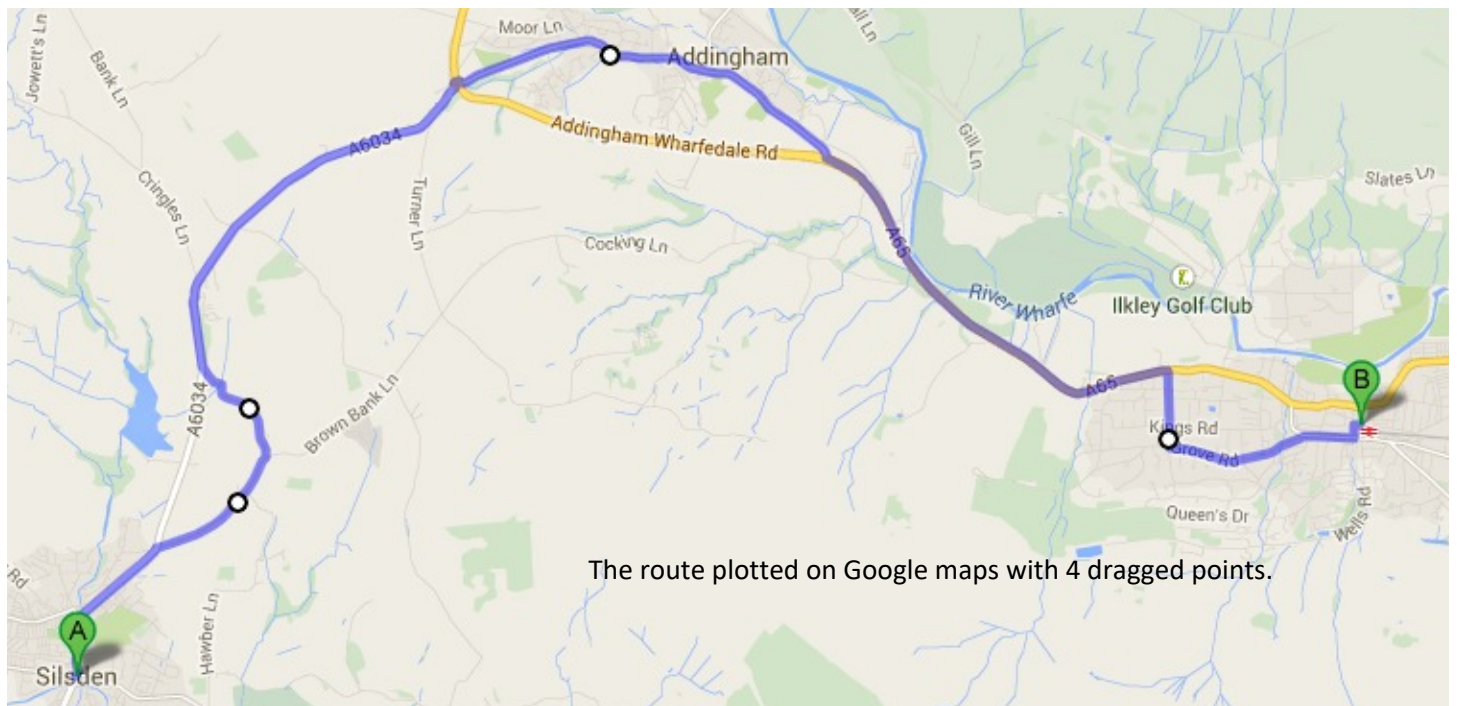
Updating Maps.

It is important to have the same version of maps on your Zumo as it is on the PC. If you don't the Zumo will recalculate the route when you first load it. If using Basecamp, note that Basecamp's default settings force the Zumo to recalculate your route. Go to Edit / Options / Device Transfer and untick all 3 boxes to stop this from happening.

All I am trying to say in this little article is that the Garmin **seems** to behave unpredictably. In fact, its behaviour is entirely predictable and depends on how you put the route into the Garmin in the first place, and what you do when you are riding. I have always used Mapsource to transfer routes and rarely have problems.

If in doubt about where your current route is taking you, stop navigation, and re-select the desired route. This will stop it nagging you to visit a Mid Point that you decided to miss. If you have gone away from the original route, then you will have to get yourself to anywhere on your route. As soon as you get there, the Zumo will start to Navigate again.

The route plotted on Google maps with 4 dragged points.

The same route created on Garmin's MapSource. Note the number of Ghost Points that are created by the software in order to ensure the SatNav follows the plotted route.

Two maps illustrating the difference between Google Maps and Garmin Maps.   On the left, a section of the route plotted on Google Maps. The blue route follows the road exactly. On the right, the same GPX file has been loaded into the Garmin Map on Map Source, which is identical to the map on the Zumo 660.   Note how the two roads do not match up. The Ghost Points that the SatNav uses are not actually on the road. So does the Zumo 660 think that you have gone off route and force it to recalculate ? I don't know, but it is a distinct possibility. If it does, then the Zumo 660 will recalculate the entire route using just the start and end points and lose any of the interesting locations that you had intended to visit.

Zumo 660 - A few random notes and observations.

These are notes that I have prepared in order to try to establish the pattern of behaviour of my Zumo in certain circumstances. It is worth noting that when I got my Zumo 660, I noticed that it behaved slightly differently from my Zumo 550, but this was probably due to the way that route points were treated when they were first entered.

What does the SatNav do if you fail to visit a Mid Point ?

One of two things. It either nags you to take turnings until you have visited the Mid Point, or it just lets you carry on without saying anything. The behaviour is entirely predictable if you spot the circumstances.

If after passing the Mid Point you are still on the intended route, the SatNav doesn't care. This could happen if the MidPoint involves turning up a side road, visiting the point and then doubling back to rejoin the road. Immediately you pass the turning, you are on the next leg of the journey, and the SatNav lets you continue in peace.

If the MidPoint is some slight detour - originally to pick up a friend.   But your friend no longer needs a lift so you remain on the by-pass, away from the planned route. The SatNav will nag you to go to the Waypoint by whichever means it thinks is the shortest. If you have auto-recalc turned on it will continue to produce new routes to get you back to your friend's pickup point. It may be a U turn at first, or it may try to take you up a side road. However, if you stay on the by-pass, the original intended route will meet up with the by pass again - at which point, the SatNav will stop Nagging you. It does not care that you didn't visit the Mid Point.

If you never meet up with the originally planned route, the SatNav has to resort to the only information that it has - ie the next scheduled MidPoint, and it will try forever to take you back there. You will not be able to see the original route on the SatNav screen, because the SatNav will have recalculated a new route to the next Mid Point.

I carried out some experimental drives in order to establish exactly what the Zumo does if you ignore a MidPoint, a Drag Point or a Ghost Point. For the tests I plotted a route with Mid Points and Drag points which I knew I would ignore because I had placed them to one side of my intended route. These were 'pit-stop' like deviations - go off route at one point and rejoin the route further down the road.

Recent experiment to and from Keighley.

Failing to visit a mid point does NOT cause a complete recalculation.   In this instance it took me to the destination, via the intermediate drag point. The satnav's preferred route is to go via Pickard Lane. The drag point was at the bend/junction at the top of North Street after the Pickard Lane junction.

This test does not conclusively answer the following questions:
- *"Does it navigate to the end point or to the next Mid Point. ?"*
- *"Does missing a Mid Point behave in the same way as missing a drag point."*
- *"When does the satnav decide whether or not to stop nagging."*
- *"And what happens to the rest of the route if you miss a drag point."*
- *"Do imported points from Google all act like drag points."*

Experiment Sat 7 Feb to try to answer the above questions.

To Ilkley with Plotted Mid Points and End points, plus a couple of off-route drag points.

I ignored all of the drag points and all of the Mid points which I had set off route.
The Zumo tried to take me to the Mid Points until I met up with the plotted route (between two plotted midpoints).
For the Drag points, it tried to navigate me to them, but wasn't bothered by me ignoring them.

*For the return journey I used a Google map, exported by Visualiser to GPX and put on to the memory card. Zumo imported the route from the GPX track that it recognised. The route was originally plotted correctly, with all of the slight detours. However, as soon as I ignored one of the route points, Zumo 660 calculated a brand new route from where I was to the **end point**. It completely ignored all of the remaining points that I had plotted in Google Maps. By aborting the navigation and reloading the route, all would be restored - until the next time I ignored a route point.*

It is worth considering that if you use Google Maps, its good idea to have the 'Recalculate' warning turned on. If it is turned off, you would never know that the route you entered is no longer being followed.