Event Services Report – Board Meeting 12 October 2016

1. Validation & Recording

Statistics

With all 2015-2016 season events now recorded, the total number of validations for year was 21487.

This is less than 3% down on last year, and some 30% up on previous post-PBP year (after adjustment to reflect that 2012 was an 11 month season.)

Breakdown by distance:

50 km	100 km	150 km	200 km	300 km	400 km	600 km	1000 km	1200 km
1118	10805	1190	6200	1006	647	456	38	27

Total km (on Calendar events) approximately 3,596,860

Changes for next Season

ACP have announced yet another streamlining of the process for BRM validations.
With effect from 1 November 2016 the Validation Secretaries will be able to print the numbered Homologations stickers rather than waiting for them to arrive in the post from Paris

Future Developments

Validation & Recording process has been mapped out and reviewed for the IT team.

In this context the email received from Validation Secretaries (& attached as Annex 1) is relevant, and their willingness to be involved in the consultation process for any changes is welcomed.

The flow chart (Annex 2) suggests that, rather than dividing the task between Validator & Recorder, our future may lie in combining the Validate & Record functions into one, but splitting the task between Validators according to the type of event.

With three Validators, the split might be:

a) BRMs
b) Paperless returns (Self-Validation events with payment by Paypal or bank transfer)
c) Everything else.

with the possibility to move things around in case of absences, although a bank account to which all the validators can have view-only access would be a pre-requisite.

Whilst the proposed change in the BRM process (ACP homologation number generation process **before** AUK validation in order to mitigate the panics in the last weeks of PBP qualification) would have to wait for our new system the other changes could be brought in sooner (Validator hitting both Validate & Record buttons). However there is little point in recruiting additional delegate Validators until bank account access is in place.

2. Brevet Card Production

No problems.

3. Routevalidator.com

This has now been paid for but I'm not aware of any action to move it to AUK controlled servers.

I would still like to proceed with a limited trial of GPS validation of traditional perms, as mentioned in my report for the 29 June BM.

Details are in Annex 3

ANNEX 1 to BMR161012 Event Services Report

From: Sue and Keith [mailto:sandk.tandem@btinternet.com]
Sent: 27 September 2016 14:11
To: Peter Lewis
Subject: Re: BRM calendar for 2017 and modification of the homologation process

Hello Peter

We will hopefully have no problem printing stickers for BRM rides. We have a colour laser printer, which is reasonably fit for purpose. We don't use it much these days except for LRM labels. It appears to have a reasonable supply of toner left, and we may well look at a replacement once it runs out. The toner costs more than the printer as you probably know.

We've given lots of thought over the past couple of years to the future of the recording process. Back in the day, the Recorder needed to sit and patiently re-type result sheets to get them into the system - a massive task. In recent years, much of the process is probably a button click once we have finished our bit. We made the suggestion several years ago that the 2 functions could be combined and then split either geographically, or by ride type, or distance. We still think that this would be the way to go, but there would need to be an integration of the payment process to facilitate debt collection.

We have also given much thought to our own place in such a system. We are well aware that our lifestyle has changed enormously since retirement and we are spending a third of the year away from home and for much longer periods of time. While this is nice for us, we do feel that the club's administration needs to be in action for much more of the time than we can currently offer. While we still value our involvement, we do feel that any improvements to the system need to happen without us. From our own point of view there is absolutely no urgency to our departure, but we do feel that any plans should not include us. We will be happy to be part of the consultation process.

Regards

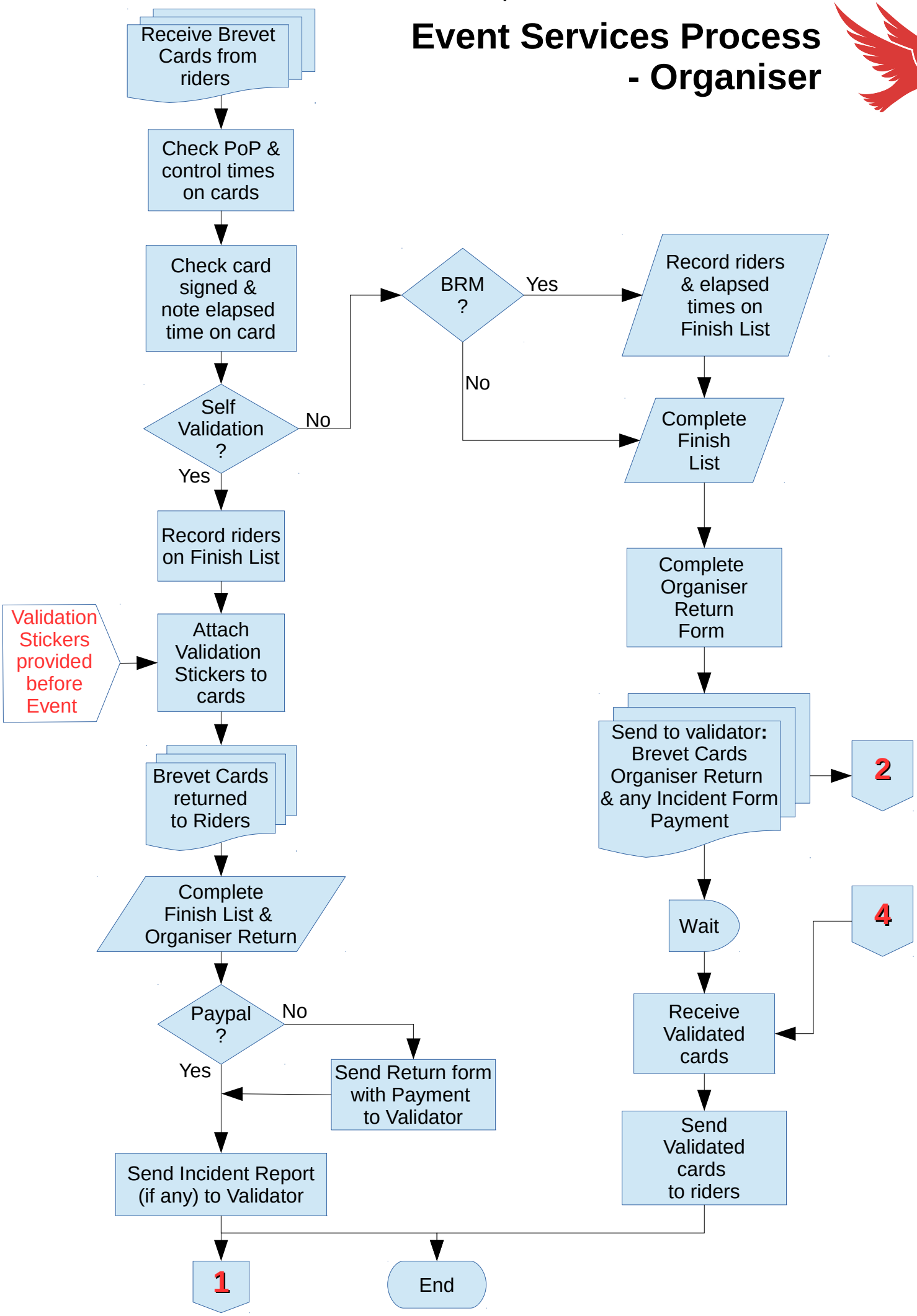
K&S

.....

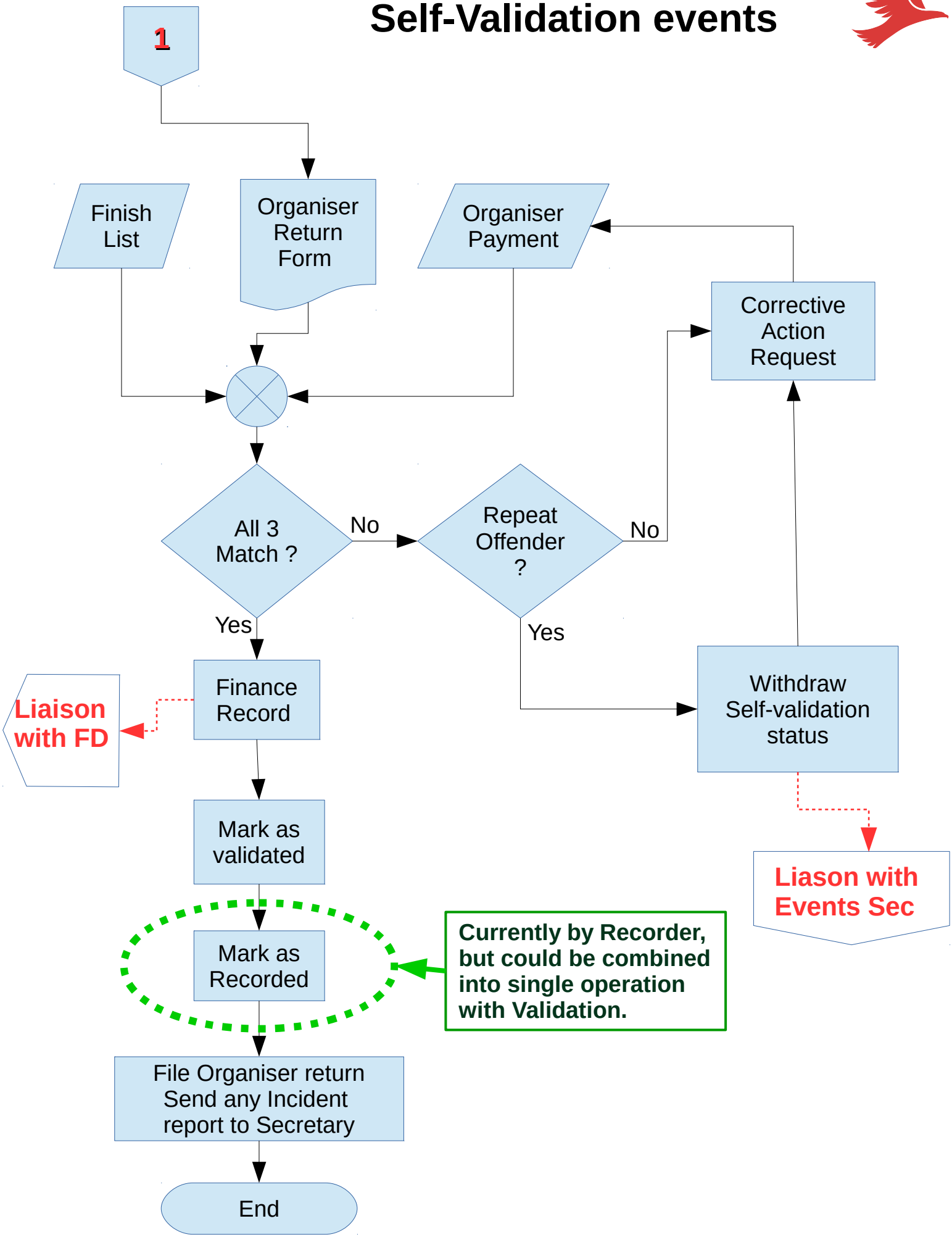
Keith Harrison & Sue Gatehouse

Tel 01603 405381

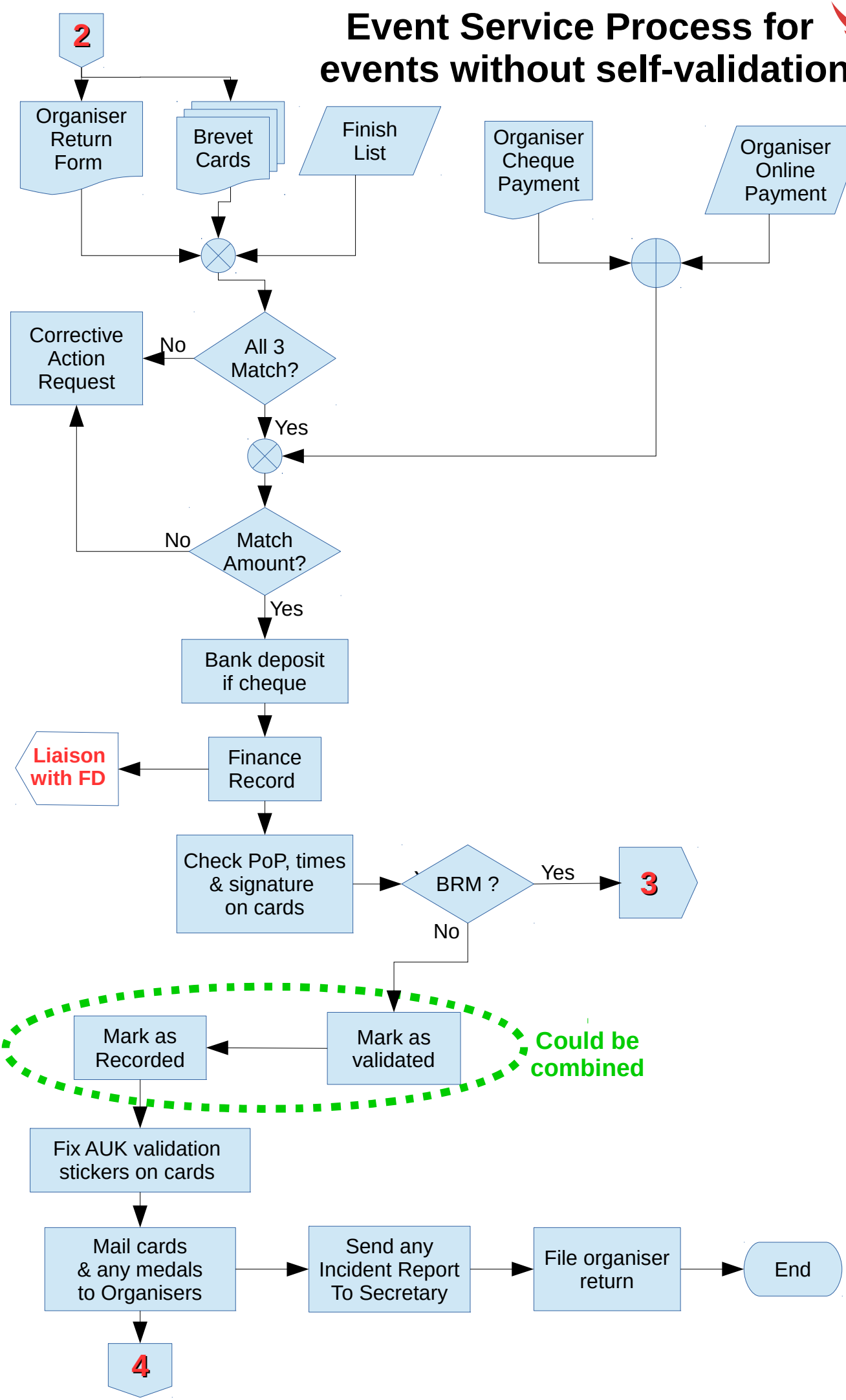
Event Services Process - Organiser



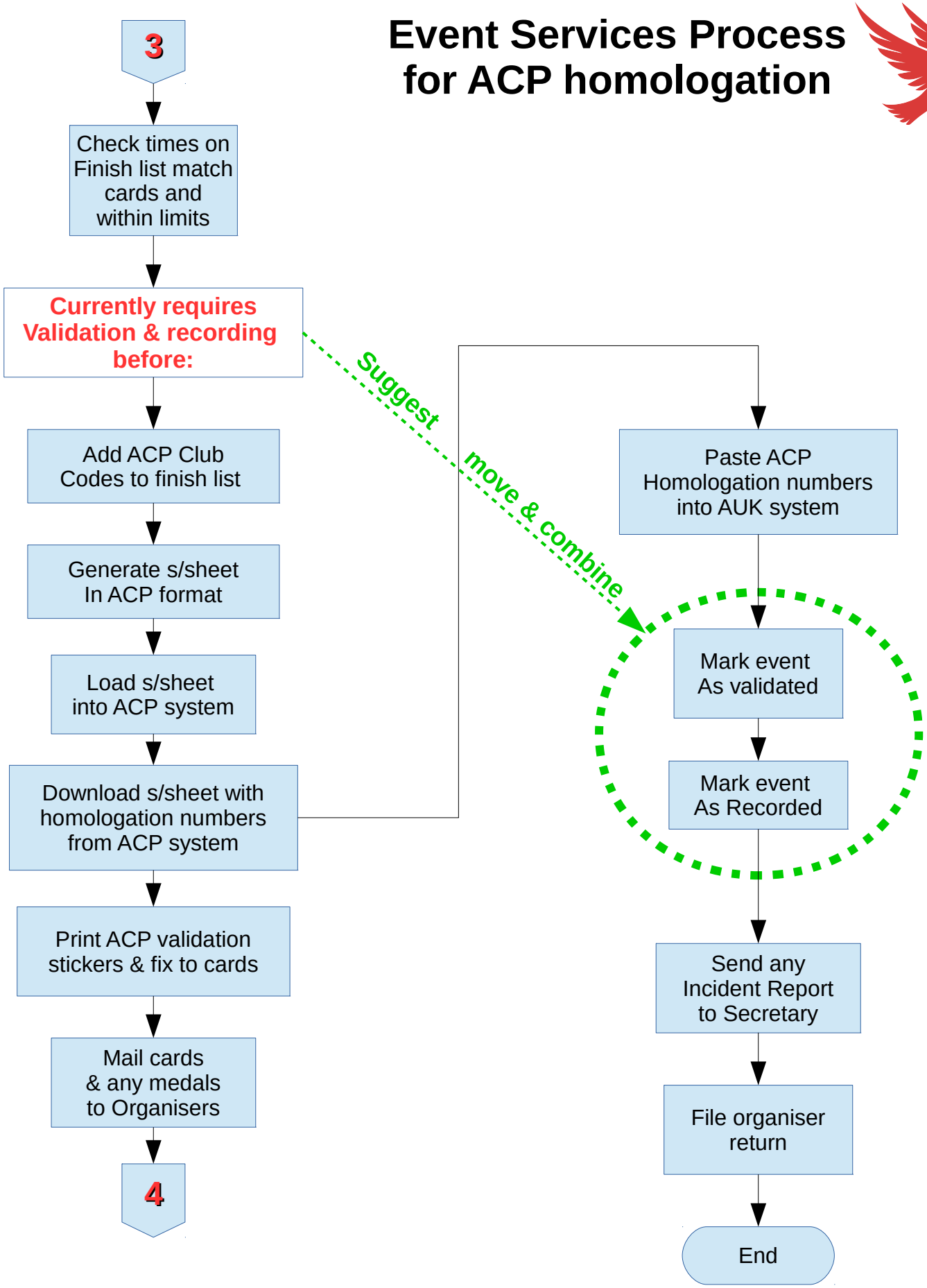
Event Services Process for Self-Validation events



Event Service Process for events without self-validation



Event Services Process for ACP homologation



Annex 3 to BMR161012 Event Services Report

Using routevalidator.com for validation of Traditional (Advisory Route) Perms

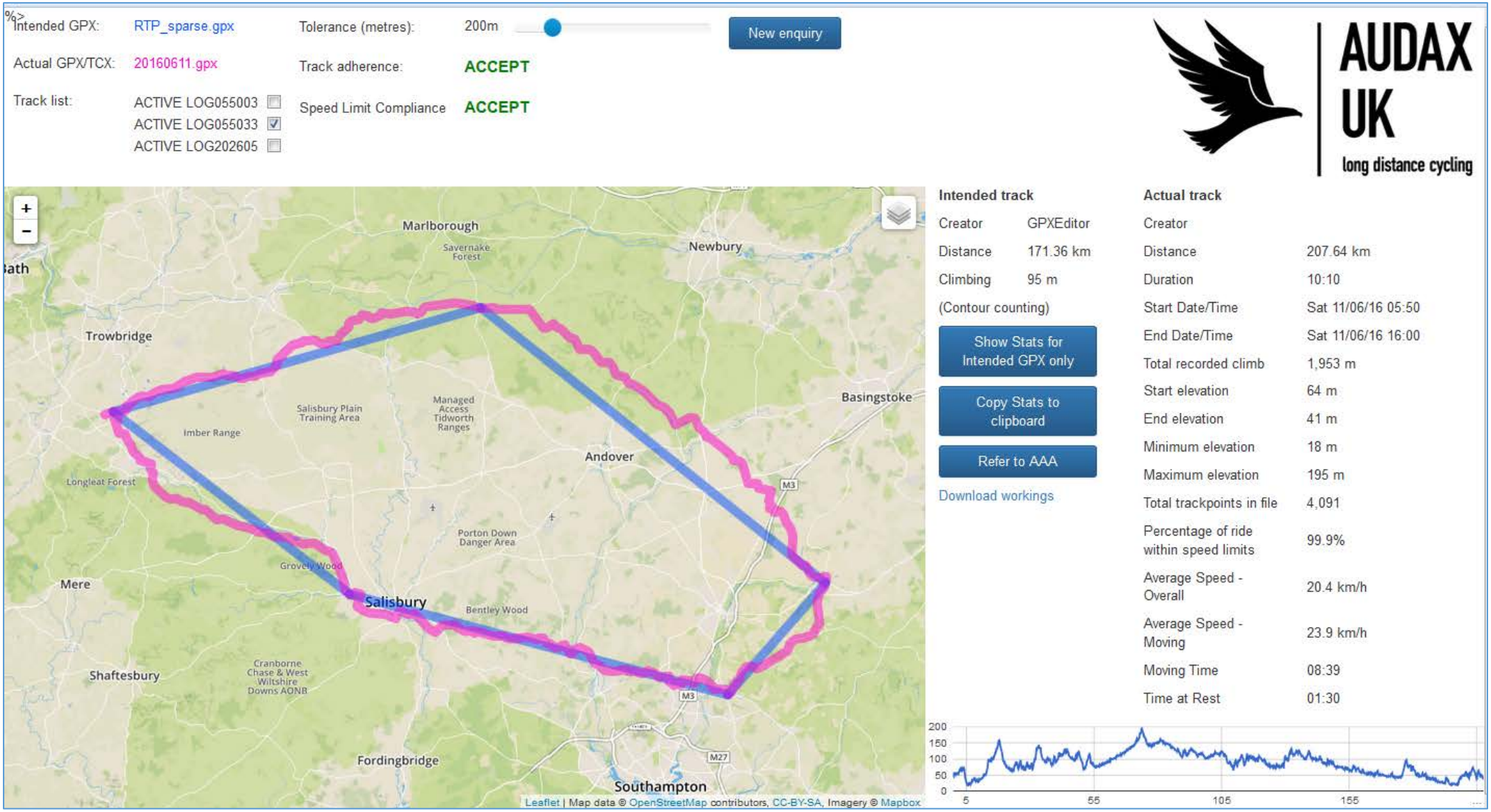


Figure 1. Illustration of the comparison screen

1. Introduction

For the past few years Audax UK has offered GPS validation of DIY Perm rides as an alternative to more conventional P-o-P (proof of passage) through each of the rider's nominated controls.

Many riders find this very much more convenient than collecting till receipts or ATM slips and mailing them to the organiser; and as a result the number of DIYxGPS has grown dramatically, whilst numbers of traditional perms have stagnated.

The development of routevalidator.com as AUK's tool to compare two GPS tracks (one to declare the 'intention' of the ride, the other being the ridden tracklog of the ride) would facilitate the extension of GPS validation to traditional (advisory route, non-DIY) perms.

Note that there is no proposal to oblige Perm organisers to offer GPS validation.

Any Perm organisers who wish to offer GPS validation as an alternative to more traditional P-o-P would need to be somewhat familiar with GPS usage and track preparation, and to be aware that a small amount of preparatory work is needed, although thereafter the validation process should be (slightly) quicker.

2. Understanding GPS tracks

The familiar picture of a GPS track is a 'wiggly line' on a screen, overlaid on a map. Looked at closely it can be seen to consist of series of straight lines which may follow, to a greater or lesser degree, the road displayed on a map:

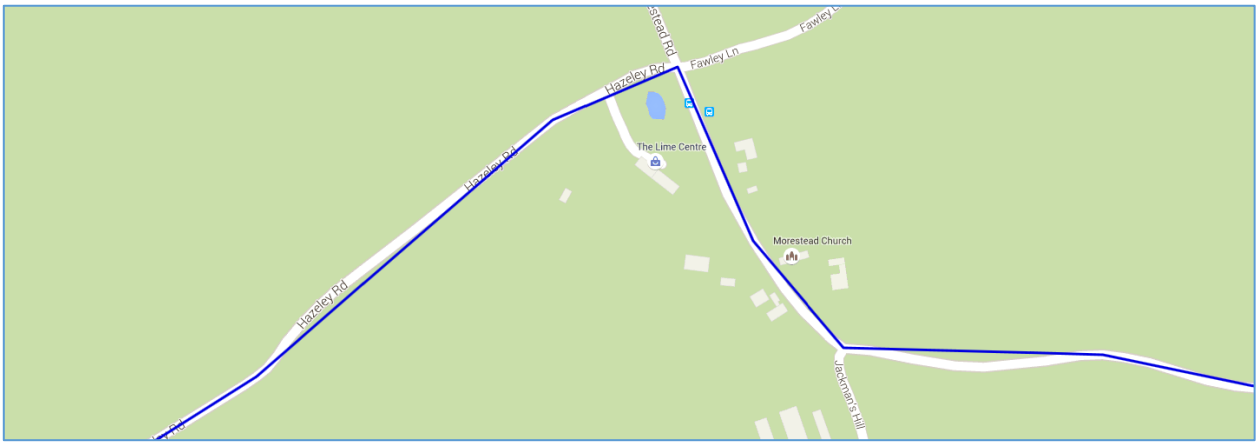


Figure 2. A GPX track (blue line) overlaid on a mapping screen.

In some respects this is a misleading picture. As can be seen in Figure 3, the computer file consists, in its simplest form, of a list of locations defined by latitude and longitude called trackpoints. The straight lines on the map display are not in the computer file at all, they are simply a rendering by a mapping program, with the locations at which the line changes direction on the map corresponding to the trackpoints.

```
<?xml version="1.0"?>
<gpx xmlns:wptx1="http://www.garmin.com/xmlschemas/WaypointExtension/v1"
xmlns:gpxedw="http://www.gpxeditor.co.uk/xmlschemas/WaypointExtension/v1"
xmlns:gpxedts="http://www.gpxeditor.co.uk/xmlschemas/TrackSegExtension/v1"
xmlns:gpxx="http://www.garmin.com/xmlschemas/GpxExtensions/v3" creator="GPXEditor"
version="1.1" xmlns="http://www.topografix.com/GPX/1/1">
  <trk>
    <name>Untitled</name>
    <trkseg>
      <trkpt lat="51.02409" lon="-1.28735" />
      <trkpt lat="51.02473" lon="-1.28332" />
      <trkpt lat="51.02556" lon="-1.28123" />
      <trkpt lat="51.02755" lon="-1.27757" />
      <trkpt lat="51.02796" lon="-1.27602" />
      <trkpt lat="51.02661" lon="-1.27509" />
      <trkpt lat="51.02578" lon="-1.27397" />
      <trkpt lat="51.02573" lon="-1.27077" />
      <trkpt lat="51.02523" lon="-1.26699" />
      <trkpt lat="51.02338" lon="-1.26336" />
    </trkseg>
  </trk>
</gpx>
```

Figure 3. A GPX track as a list of positions, defined by latitude & longitude

Typical mapping websites such as Bikehike, RidewithGPS or gpxeditor will 'draw' tracks on the screen which have an average of about 20 trackpoints per km, and thus appear to follow the road very closely (always assuming the map has been accurately drawn). However a track density an order of magnitude smaller than this is usually sufficient both for navigation and to define exactly which roads are intended to be used.

3. How routevalidator works

Routevalidator looks in turn at each trackpoint in the file which defines the rider's declared intention, and checks to see whether the ridden tracklog passes with a defined tolerance distance of that point. If there are any trackpoints in the 'intended' track that the ridden tracklog does not pass close enough to, these are referred to the organiser for further investigation.

Thus, if there are a sufficient number of trackpoints in the intended file to define which roads are to be used, routevalidator can be used to validate mandatory route DIYs (and this was its original purpose).

However there is no lower limit to the number of trackpoints in the intended file. The only 'requirement' is that when the comparison is made the ridden tracklog passes close enough to as many trackpoints as are in the intended file. Thus, if a trackpoint is placed on each of the 'controls' of an advisory route, the ridden tracklog can wander where it (or rather the rider) wants. So long as the ridden tracklog passes sufficiently close to each trackpoint/control this can be taken by the organiser (or validator) as P-o-P.

In addition to comparing the tracks in this manner routevalidator also looks at, and reports on, the time taken and a number of parameters that enable the organiser or validator to check, with a high degree of certainty, whether the ridden tracklog was produced using a bicycle or other human-powered machine.

4. Preparation by organiser

In practice then, the Perm organiser wishing to use this tool would need to create a track consisting only of as many trackpoints as there are controls (including the start and finish). The straight lines displayed between each trackpoint will evidently not follow the roads, and indeed some mapping sites (such as Bikehike) do not offer an option to do other than follow the roads.

Fortunately the free versions of both gpxeditor (use 'as the crow flies' routing method) and ridewithgps (select PLAN, then DRAW LINES as opposed to the more usual FOLLOW ROADS option) will do this with a minimum of fuss, just click on the start, then on each control location in turn and finally again at the finish, before saving the file.

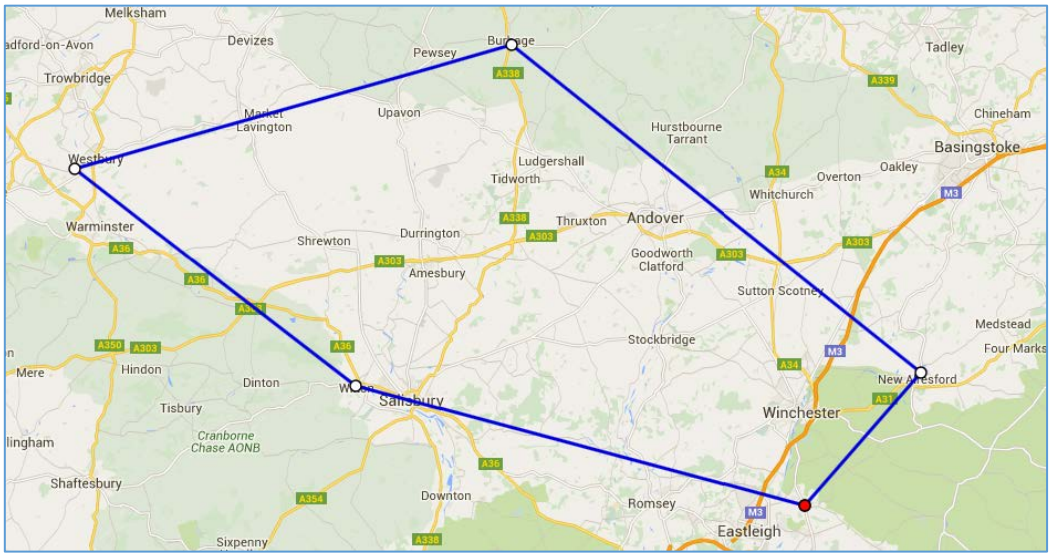


Figure 4. 'Intended track' for an advisory route with four intermediate controls (+ start/finish)

It should be evident that such a track is not useful for navigation purposes (except possibly in the remoter parts of Scotland) and to avoid confusion it should not be shared with riders.

There is no need for extreme accuracy in placing the controls, indeed an offset of a very few metres from the actual café or road junction may be useful later (see 6.4 below).

Before offering GPS validation to his/her riders the organiser should submit this track to the Permanents Secretary (or nominated Delegate) for checking against the locations declared as controls in the non-GPS version of the ride.

After a trial period it is expected that these tracks (& ridden tracklogs) can be uploaded to AUK servers and the comparison done 'in the cloud'; but until that is in place the organiser should keep a local copy (and a back-up) of the approved file. The Permanents Secretary would also keep a copy.

5. Process

Whilst GPS validation lends itself to a process with no physical brevet card, it is suggested that these remain in use for a trial period, with a process such as the following (after approval by Perms Secretary)

- Rider advises Organiser at time of entry that GPS validation required.
- Organiser sends routesheet (but NOT Brevet Card) to rider.
- After ride, rider sends ridden tracklog to organiser as e-mail attachment.
- Organiser makes comparison[(see Section 6)] and adds Date Ridden to their event results page on aukweb.
- Organiser sends ridden tracklog to Permanents Secretary for further check & Validation on aukweb.
- Perms Sec sends validation sticker to Organiser (if not already in possession of).
- After Validation, Organiser completes reverse of card with time and sticker and mails card to Rider.

6. Using routevalidator for comparison

6.1 Acceptable file types

At the present time the only acceptable file types are .gpx and .tcx
These file types may also be contained in .zip folders.
Where a .zip folder is used to load the actual ridden track, it may contain multiple files.
If the organiser chooses to accept other file types (such as .fit) they are responsible for converting it to .gpx before sending it to Perms Secretary for checking.

6.2 Loading of locally held tracks via dialog box

Go to routevalidator.com

In the top left of the screen you will see the following controls:

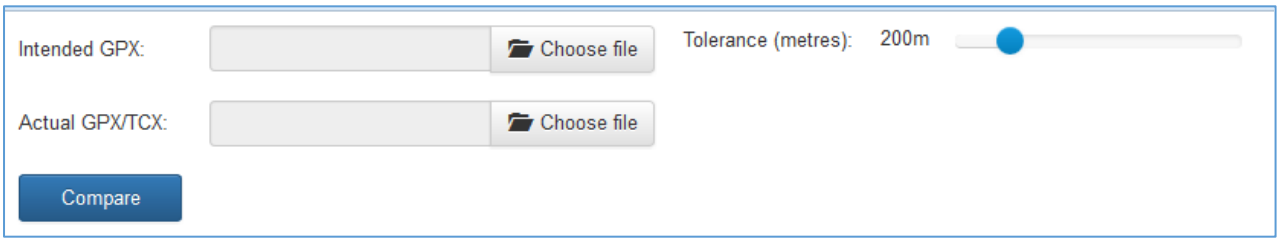


Figure 5. Controls for loading tracks via dialog box

Click on the upper 'Choose file' button to open a Windows File explorer window.
Locate the local copy the 'intended' track file [(prepared in Step 4)] and double-click it (or single-click + Open)

Click on the lower 'Choose file' button to open a Windows File explorer window.
Locate the file of the rider's actual ridden tracklog and double-click it (or single-click + Open)

You can leave the 'Tolerance' at its default 200m level or adjust it to suit your preference before clicking the 'Compare' button.

6.3 Loading of Tracks by URL

Once the infrastructure is in place to load both intended track and ridden tracklog to aukweb it will be possible to 'call' them by using the following syntax (substituting the highlighted portions with the URL for each file)
http://routevalidator.com/validate?intended=URL_of_intended_file&actual=URL_of_ridden_tracklog

It is also possible to set a tolerance level (other than the default 200m) as follows:
http://routevalidator.com/validate?intended=URL_of_intended_file&actual=URL_of_ridden_tracklog&tolerance=number_of_metres

In the case of the mandatory DIYs a notification email is automatically sent to the organiser once the ridden tracklog is uploaded and this contains the full link in the correct format, directly to the comparison screen. An analogous process is feasible for Perms if the trial is successful.

6.4 Error conditions

If routevalidator is unable to read either of the files an error message will be shown and the file name boxes blanked-out ready for a retry. Click on the red X to dismiss the error, then examine the file before trying again.

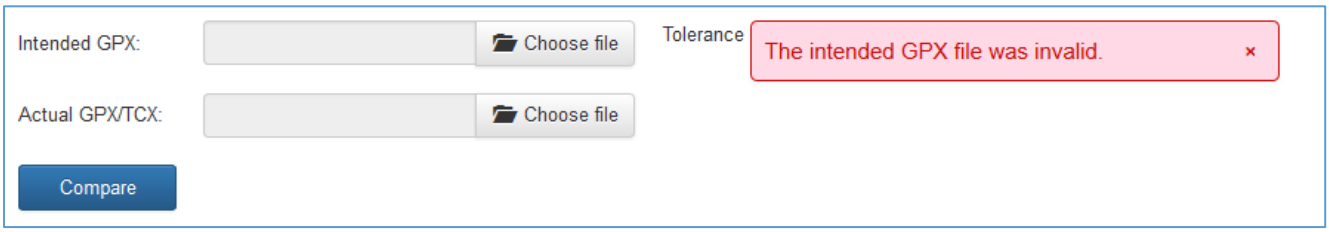


Figure 6. Example of an error message

There are some conditions which provide a 'warning' message in a similar format. In such cases dismissing the message will leave the tracks in place for comparison, but additional care will be need to be taken by the user to ensure validity of the ride.

One such check is for identical (or near-identical) files being loaded as intended and as ridden files. This is seen as a necessary check for use of the tool on Mandatory route events, but is clearly irrelevant to advisory route perms. Near-identical files are detected by an 'invisible' run of the comparison at a 10 metre tolerance level. In the case of advisory route perms this could yield a warning message but can quickly be checked and dismissed after reference to the map display which should appear as Figure 1 (straight lines of blue – intended track, with red line following road). Deliberate placement on the intended track of one or more controls slightly off the road will prevent this becoming a regular issue.

There is also a warning error if the 'time at rest' is less than 5% of the total elapsed time. Lack of 'time at rest' is characteristic of tracks produced by software rather than by a rider on a human-powered machine on real roads. If this warning is shown the user is advised to compare the 'Creator' of the ridden track with the list of software & websites known to produce files which have sufficiently similar characteristics to those of ridden tracklogs.

Current 'blacklist' (at 29 June 2016)

Bikehike.co.uk
This is not to be taken as any sort of condemnation of bikehike. Tracks recorded by a GPS device and post-processed with bikehike will have a non-negligible time at rest, will generally be perfectly valid for comparison.

6.5 Track List

Once files have been successfully loaded (and the file names will show each in a different colour) the 'Compare' button is replaced by a list of the tracks within the ridden tracklog file. Each track has a check box alongside it. By default routevalidator only looks at tracks longer than 2.5km. Shorter tracks are most often just 'noise' generated when the unit is switched on but stationary. These portions of track can be included in the comparison if required by clicking on the check-box.

Figure 7. Files successfully loaded. A list of the tracks found in Ridden.gpx is shown, but only one is checked (and used in comparison) as the others are less 2.5km in length.

6.6 Track Adherence & Referral areas

Immediately to the right of the file names & track list and below the tolerance slider (of which more later) is 'Track Adherence' followed either by 'REFER' in orange or 'ACCEPT' in green.

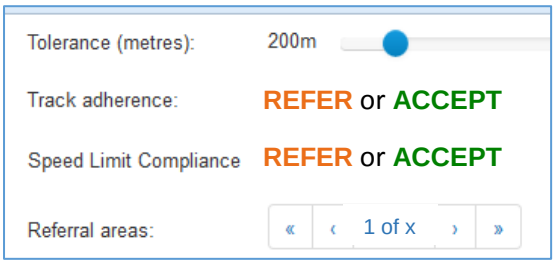


Figure 8. Top to Bottom:

Tolerance slider
Track Adherence
Speed Limit Compliance
Referral Areas (numbered)

Routevalidator looks to see whether the ridden track passes within the tolerance distance of each and every trackpoint in the 'intended' file. If it does, then the ACCEPT condition is fulfilled.

The word REFER means that there are trackpoints in the 'intended' track to which the rider has not passed close enough. These are called 'Referral Areas' and can be examined in greater detail by stepping through the numbers, which zooms the map display.

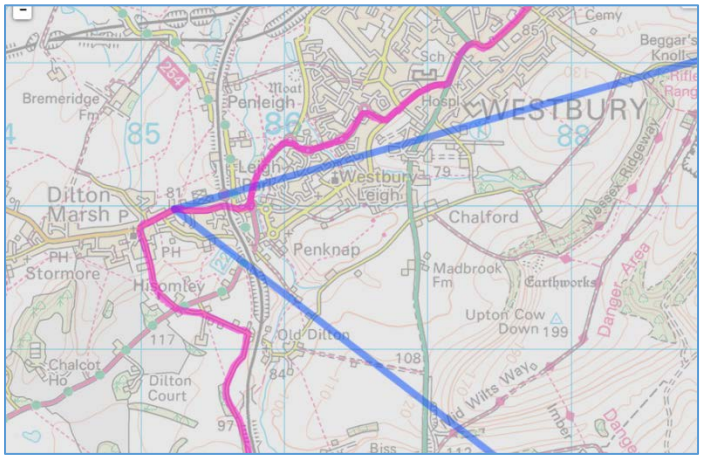


Figure 9a. Rider (red line) has passed through 'control' at Dilton Marsh (where blue line changes direction).

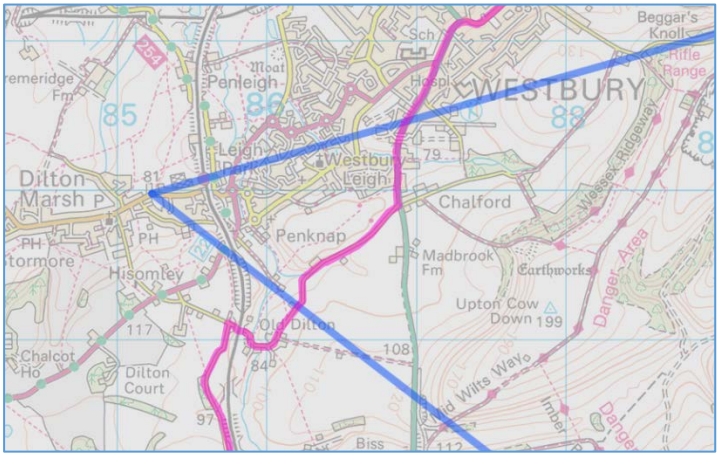


Figure 9b. Example of a 'referral area': Rider (red line) has missed the 'control' (where blue line changes direction) by more than the tolerance distance.

Where there are referral areas, only the organiser can determine (through local knowledge) whether the rider can be said to have 'visited' the control.

6.7 Tolerance & Recalculation

The 200 metre default tolerance is sufficient to allow for riders visiting a different café in a town, or for example in the case of an unexpected closed road preventing access to the particular location defined in the intended track

It can be adjusted with the slider in 10 metre increments from 10 metres minimum to 1 km maximum. As soon as the slider is moved a 'Recalculate' button appears, clicking it recalculates the track adherence and any different referral areas. The actual tolerance acceptable will be determined by the Organiser's local knowledge, but it might be considered necessary to ask the rider for 'further explanation' with supporting evidence, such as a photo of a Closed Road sign, if the closest approach by the rider to a control was at the upper end of the range.

6.8 Speed Limit compliance

Routevalidator uses the same methodology as AUK's previous tool (ValidateGPX) for establishing whether or not the ride was completed on a human-powered machine. This is based on examining the gradient of the road and establishing different upper speed limits for ascents, flat road & descents.

A compliance with these speed limits over 99% of the track is held to be sufficient 'proof' of using a human-powered machine and will show a green ACCEPT. Recumbents (which are capable of greater speeds on descents) may record compliance with the speed limits for a percentage of the ride slightly less than 99% (which will show as an orange REFER).

6.9 Map display

The map display shows heavy lines for the ridden track (in red) and for the intended track (blue). The individual colours match the text of the track names above, where the two tracks are overlaid the colour appears as magenta.

At the upper left corner of the map are zoom in/out controls (+ & - symbols). Zooming is also possible with a mouse scroll-wheel.

At upper left an icon resembling a stack of paper provides a choice of map-display, with the Ordnance Survey display being somewhat 'faded' to ensure good contrast with the tracks.

Hovering the mouse cursor over the track (or clicking on the track) displays for that point on the track:
The distance in km from the start of the ride, the time of day and, in parentheses, the elapsed time since the start.

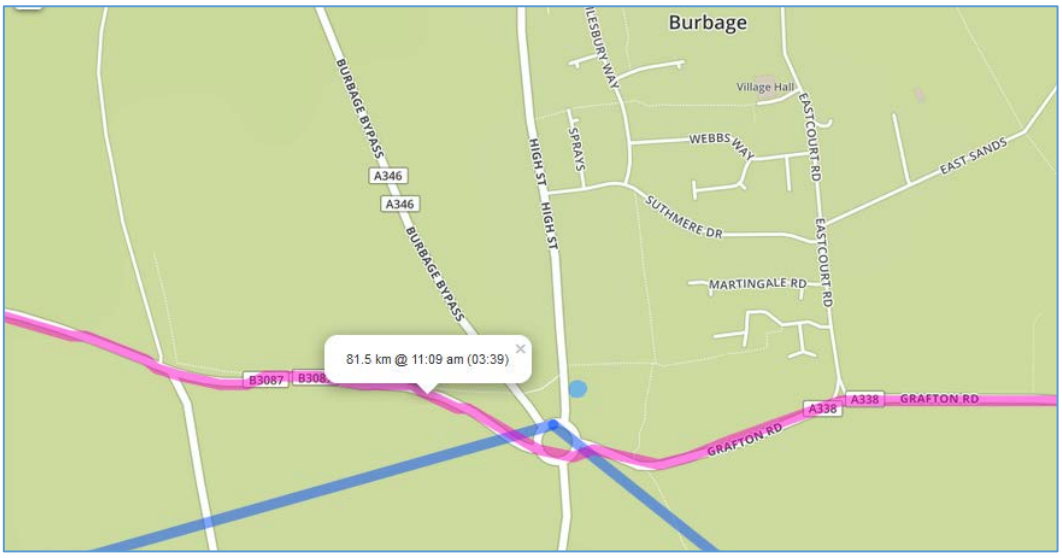


Figure 10. Map display, hovering the mouse over the ridden track shows km since start, time of day and elapsed time.

(in this example the 'control', where blue line changes direction, is at a shop where paper P-o-P may be obtained. With GPS validation the rider can still be said to have gained P-o-P at the control even when shop is closed)

6.10 Statistics

To the right of the map are shown, for the intended track:

- Creator
- Distance
- Climbing (which should be ignored in case of an advisory route)

And for the Ridden track:

- Creator — either make/model of GPS, or name of software used to process track (if blank, signifies older model Garmin Etrex)
- Distance — in km
- Duration — in hh:mm format
- Start Date/Time
- End Date/Time
- Total recorded climb — from the elevations recorded by the device
- Start elevation
- End elevation
- Minimum elevation
- Maximum elevation
- Total trackpoints in file — 2000 points per 100km is typical,
- % of ride within speed limits — expected to be well in excess of 99% for most rides
- Average Speed - Overall — should be between 15 km/h and 30 km/h
- Average Speed - Moving
- Moving Time
- Time at Rest

6.11 Additional buttons

Show stats for intended track only – this is now redundant

Copy Stats to Clipboard – This copies across the statistics mentioned above and precedes them with:
Whether the track adherence is ACCEPT or REFER (at the quoted tolerance distance)
Whether the Speed limit compliance is ACCEPT (at the 99% threshold) or REFER

The top line of the statistics is Validate YES (if both track adherence and speed limit compliance are ACCEPT) or TBC

The header is Name of the track, and its URL if not locally stored.

https://www.aukweb.net/gps/lewis_160612_24.gpx	
Validate	Yes
Track adherence	ACCEPT
@ Tolerance distance	200m
Speed Limit Compliance	ACCEPT
Creator	
Distance	207.64 km
Duration	10:10
Start Date/Time	Sat 11/06/16 05:50
End Date/Time	Sat 11/06/16 16:00
Total recorded climb	1,953 m
Start elevation	64 m
End elevation	41 m
Minimum elevation	18 m
Maximum elevation	195 m
Total trackpoints in file	4,091
Percentage of ride within speed limits	99.9%
Average Speed - Overall	20.4 km/h
Average Speed - Moving	23.9 km/h
Moving Time	08:39
Time at Rest	01:30

Figure 11.
Example of the information pasted from the clipboard, after clicking Copy Stats to Clipboard button

Refer to AAA – This button is only used if the ride has not yet been assessed for AAA points, and either rider or organiser believes it may qualify. It generates an email to the AAA man (Steve Snook at time of writing). If the tracks have been loaded locally then the ridden track must be attached manually to the email. If tracks have been loaded by URL, the URLs for the two individual files, along with the URL for the complete comparison are automatically pasted into the text of the email.

7 Future developments

Already identified as desirable for future versions are:

Ability for routevalidator.com to accept .fit files as ridden tracklogs.

Development of infrastructure on aukweb (or successor system) for upload & long-term storage of 'intended' track file prepared by organiser.

Development of infrastructure on aukweb (or successor system) for upload by riders of ridden tracks, notification to organiser, and short-term storage whilst validation takes place.