Photos in ArcGIS Online with FME

Andrew Shakes

KiwiRail

About KiwiRail

Background

Cyclone Gabrielle

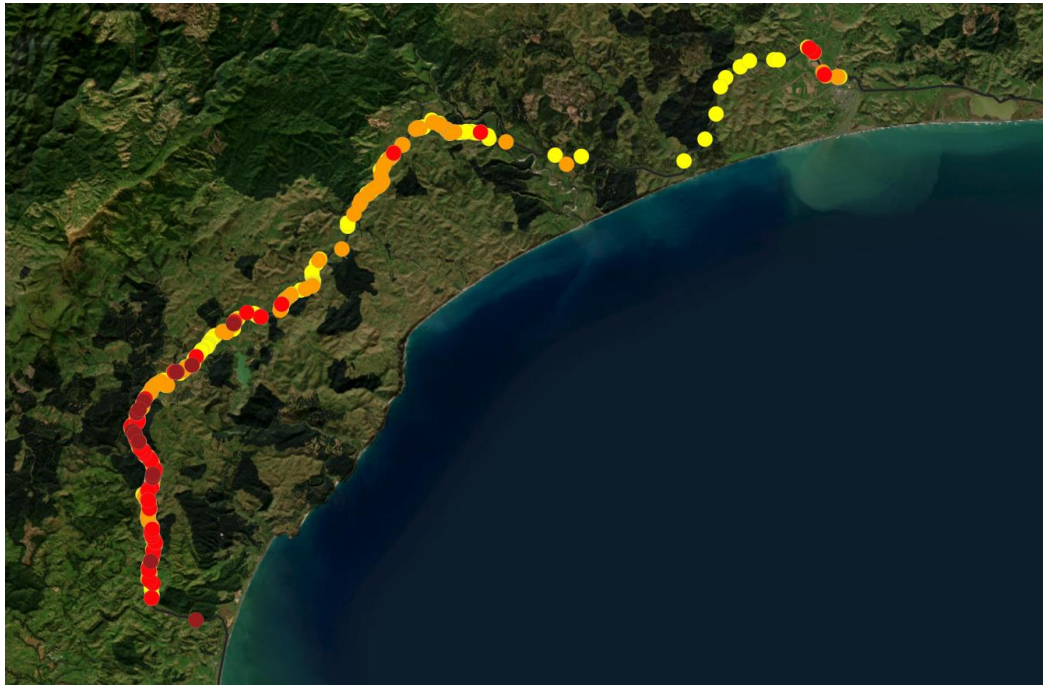
Background

Cyclone Gabrielle

687 damage sites across Northland, Auckland, Hawkes Bay

Palmerston North to Gisborne Line (PNGL) &

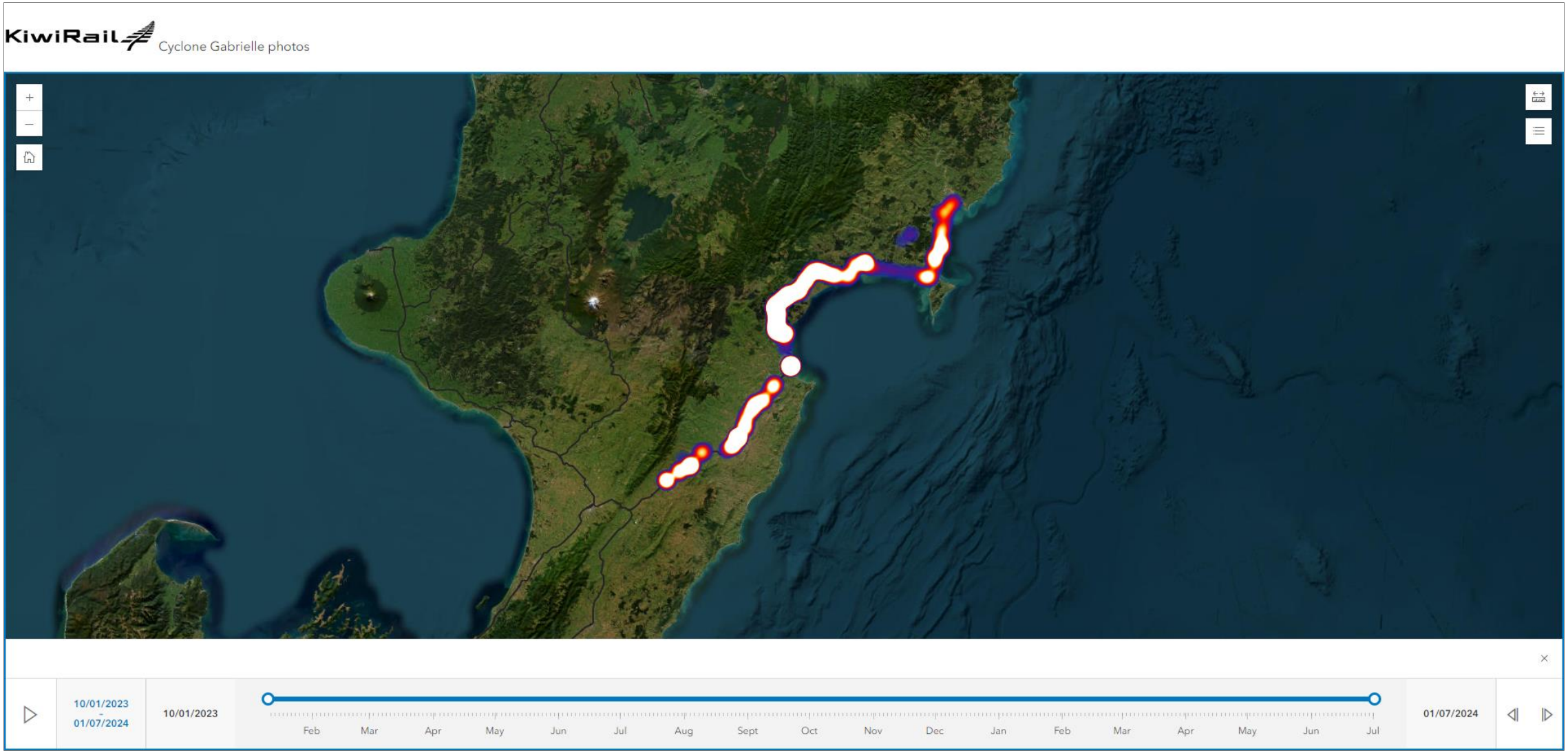
North Auckland Line still partly closed (NAL)



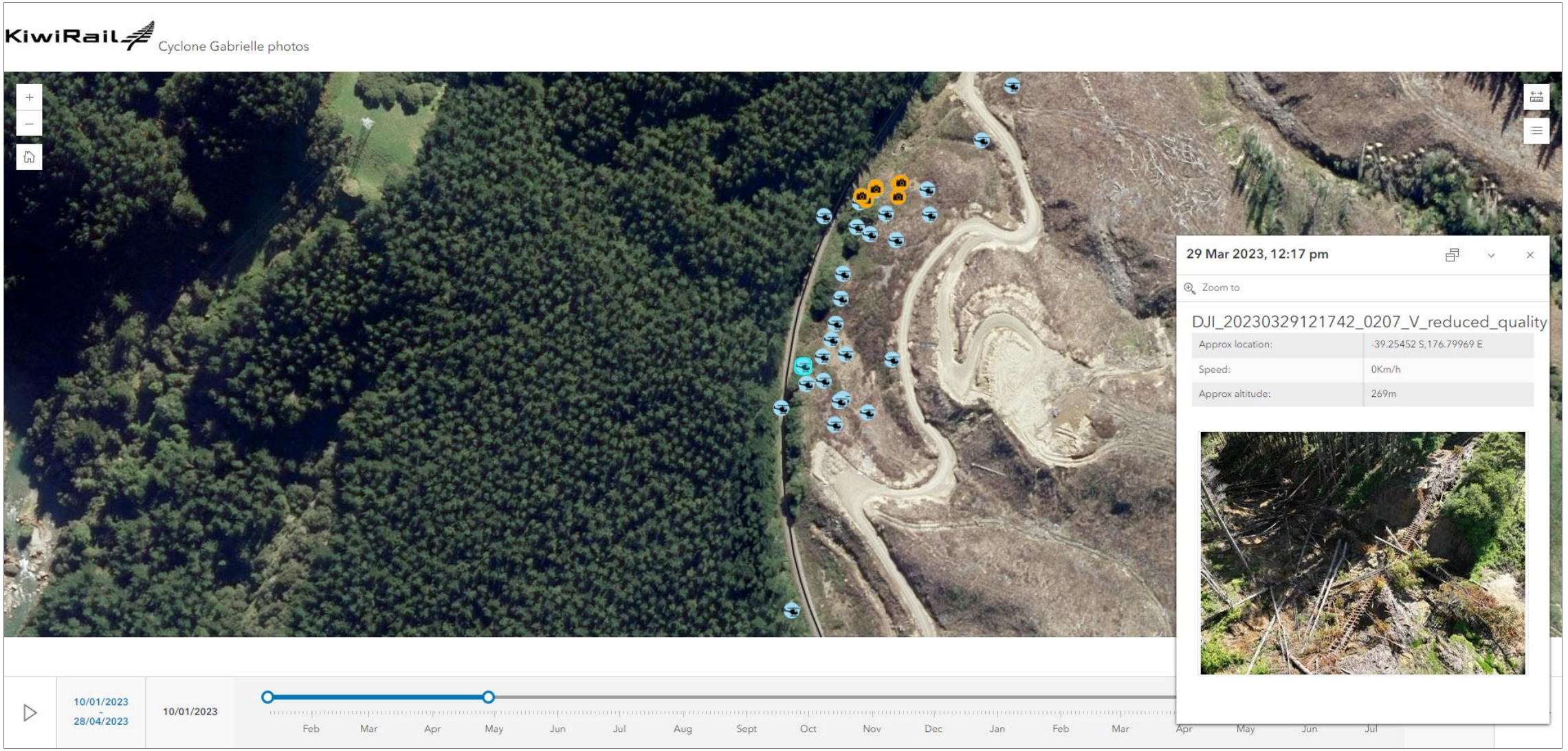
Background

Cyclone Gabrielle

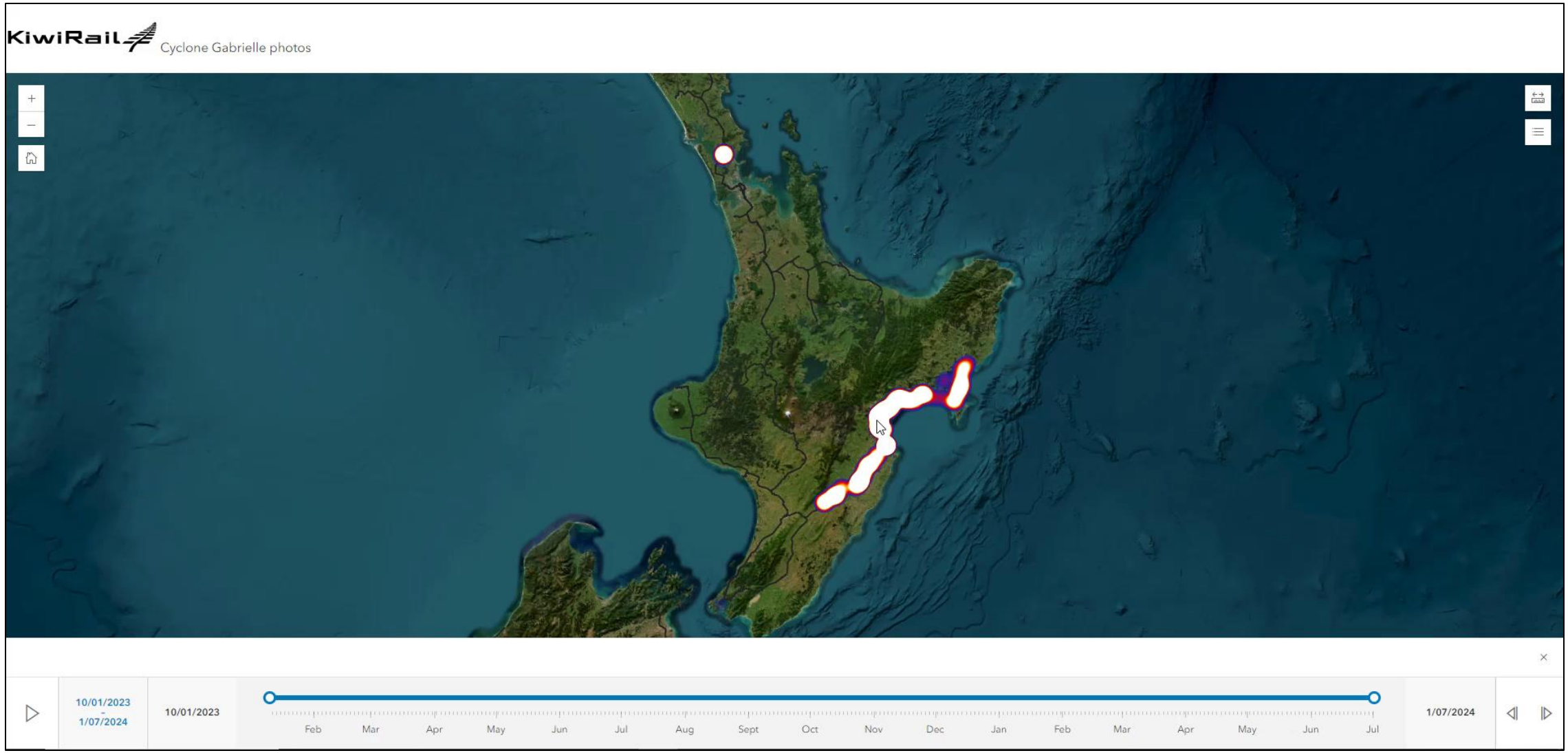
Photos app


KiwiRail
Cyclone Gabrielle photos
10/01/2023
01/07/2024
10/01/2023
Feb
Mar
Apr
May
Jun
Jul
Aug
Sept
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
01/07/2024

Photos app


KiwiRail
Cyclone Gabrielle photos
29 Mar 2023, 12:17 pm
Zoom to
DJI_20230329121742_0207_V_reduced_quality
Approx location: -39.25452 S,176.79969 E
Speed: 0Km/h
Approx altitude: 269m
10/01/2023 - 28/04/2023
10/01/2023
Feb Mar Apr May Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar Apr May Jun Jul

Photos app

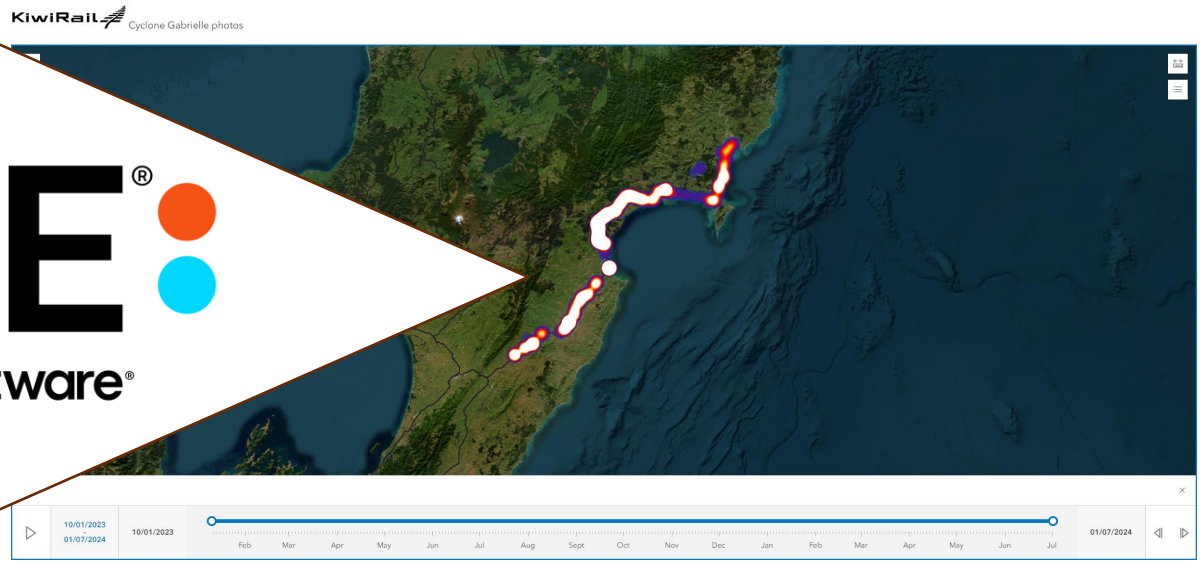

KiwiRail
Cyclone Gabrielle photos
10/01/2023 - 1/07/2024
10/01/2023
Feb Mar Apr May Jun Jul Aug Sept Oct Nov Dec Jan Feb Mar Apr May Jun Jul
1/07/2024

Loading the photos

Loading the photos

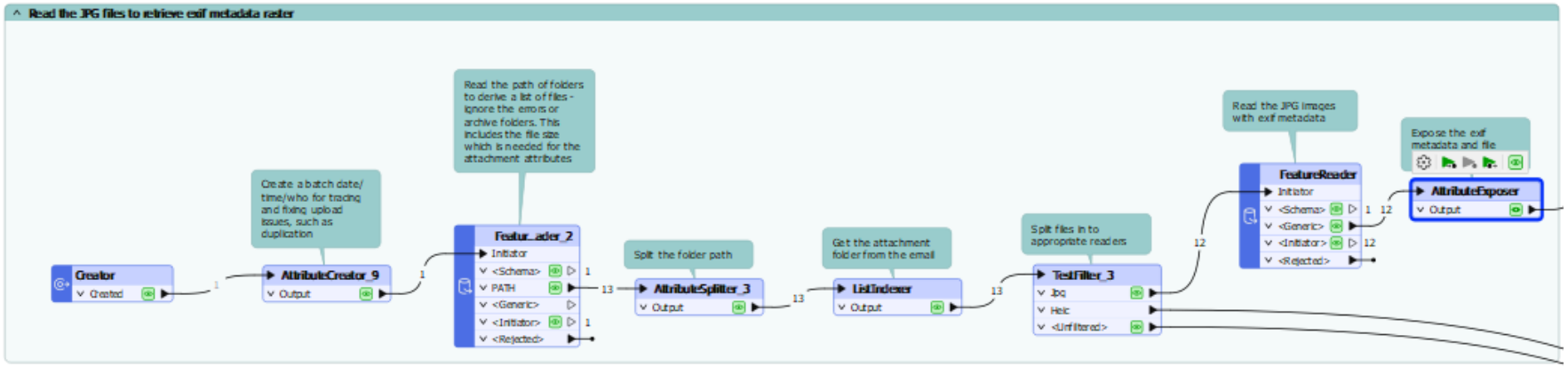
2023-03-28 Eskdale Drone photos and 360 (A Putra)	22/12/2023 3:21 AM
2023-03-28to29 (A Putra)	2/06/2023 1:40 PM
17052023_Tunnel_Inspections Sarah L	2/06/2023 1:45 PM
20230228	31/01/2024 8:39
20230301	7/03/2023 5:00
Aurecon Photos	2/06/2023 2:02
B McDowell Tonkin Taylor 29June2023 helicopter W...	31/01/2024 8:39
Br 176 PNGL Drone	2/06/2023 2:05
Bridge234 - Putorino Civil projects Drone	11/05/2023 1:28
Hastings south	4/07/2023 12:48
kiwirail 28 feb 2023	15/03/2023 5:23
March 10-11 heli D Molnar	22/12/2023 3:21
NAL 85.9km and Tahekeroa Rd Slip Recovery Projec...	2/06/2023 2:05 PM
NAL 86km and Tahekeroa Rd Slip Recovery Project	7/03/2023 4:10 PM
Structures Team Photos	2/05/2023 8:13 AM

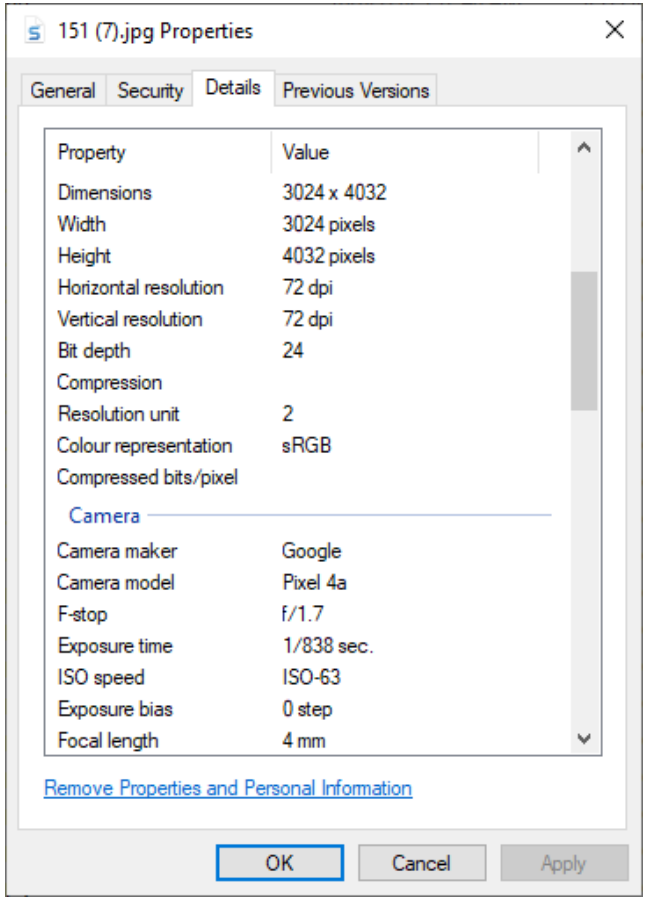
FME® by Safe Software®



5300 photos

1. Let's get nerdy: exif metadata





Visual Preview | Translation Log

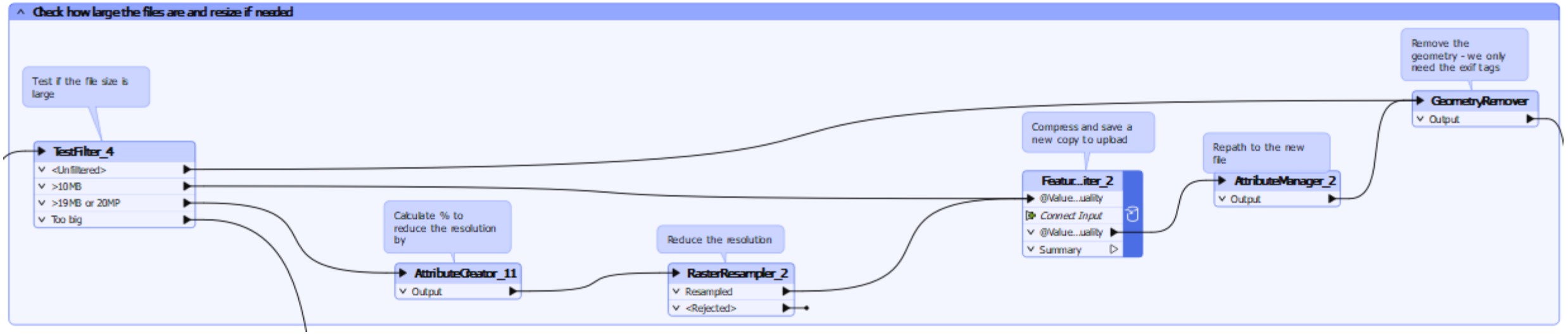
Table

AttributeExposer: Output

	jpeg_exif_datetime	jpeg_exif_gpsaltitude	jpeg_exif_gpsimgdirection	jpeg_exif_gpsspeed	jpeg_exif_gpslatitude
1	2023:03:02 12:32:53	(35.6953)	(283.372)	(0)	(36) (32) (19.84)
2	2023:03:02 12:32:57	(33.9405)	(288.478)	(0)	(36) (32) (19.84)
3	2023:03:02 12:34:05	(38.1227)	(252.202)	(0)	(36) (32) (19.62)
4	2023:03:02 12:34:10	(37.8061)	(275.226)	(0.21)	(36) (32) (19.62)
5	2023:03:02 12:34:23	(38.1807)	(355.295)	(0)	(36) (32) (19.6)
6	2023:03:02 12:35:07	(37.7162)	(100.345)	(0)	(36) (32) (19.7)
7	2023:03:02 12:35:12	(37.5663)	(103.808)	(0)	(36) (32) (19.7)
8	2023:03:02 13:12:16	(44.0718)	(136.148)	(0.26)	(36) (32) (20.61)
9	2023:03:02 13:12:25	(39.8536)	(22.4987)	(0.3)	(36) (32) (20.78)

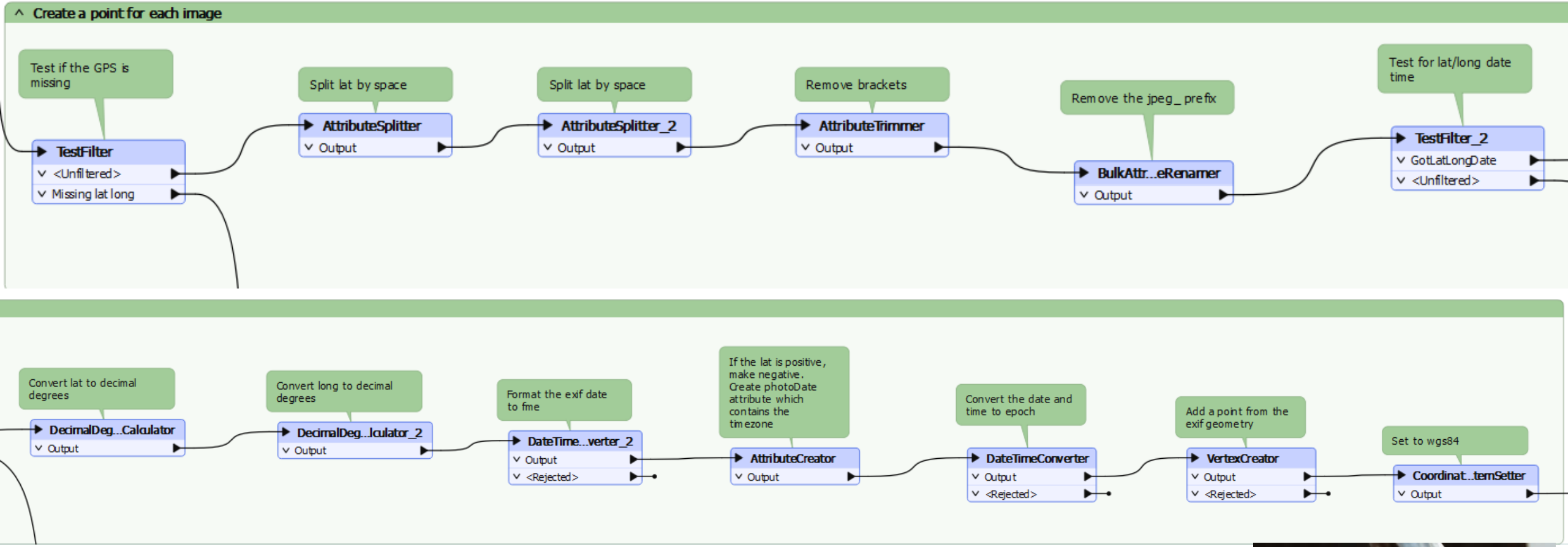
in any column

2. Images that need to diet



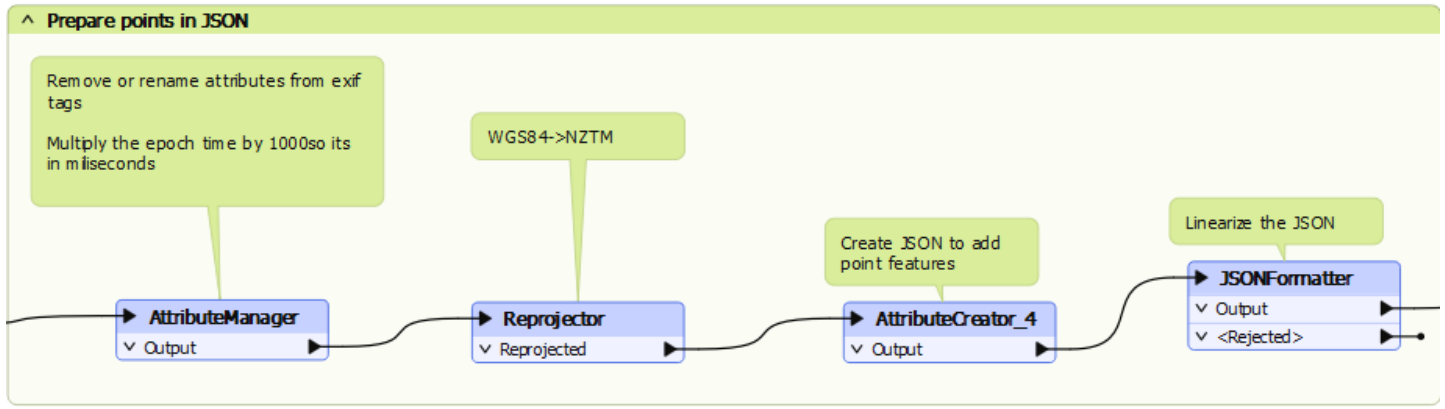
- 10-19Mb: use JPG compression on the writer
- >19Mb: resample then compress to a % of original size
- Feature writer: save a copy: _reduced_quality (filename suffix)
- Remove the geometry (image) from the workflow after that to improve performance
  - we only need the JPG metadata

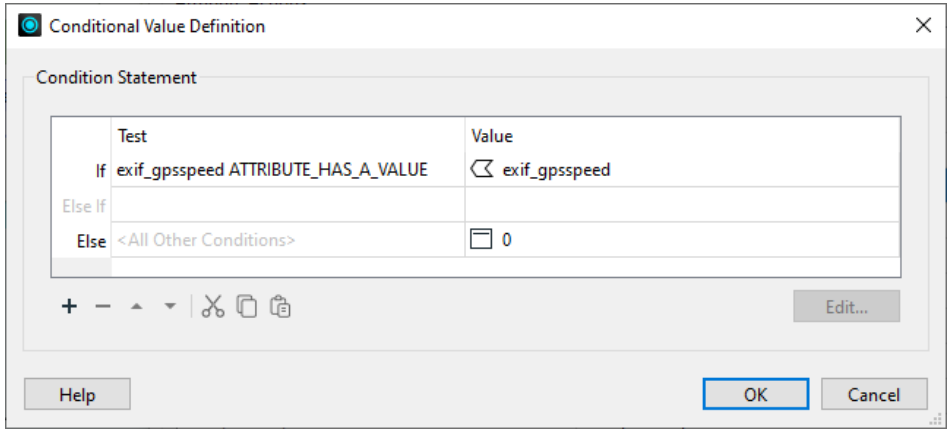
3. FME can generate geometry blindfolded

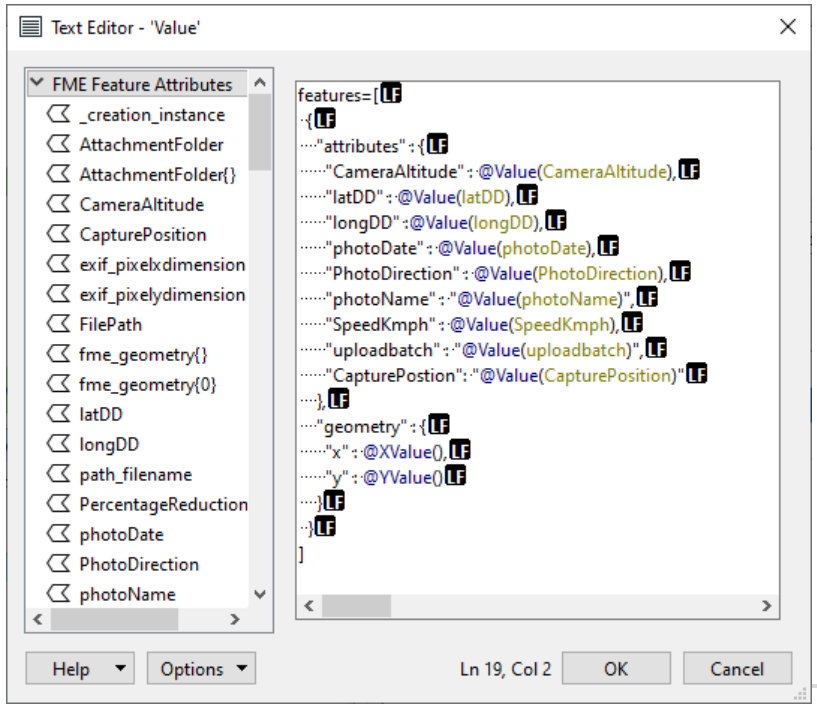


- Kindly ask your photographers to check their images before you process them
- Use FME to filter remaining data errors
- Format the dates from local into UTC. Epoch format worked best (in milliseconds).

4. JSON does the hard work so you can REST

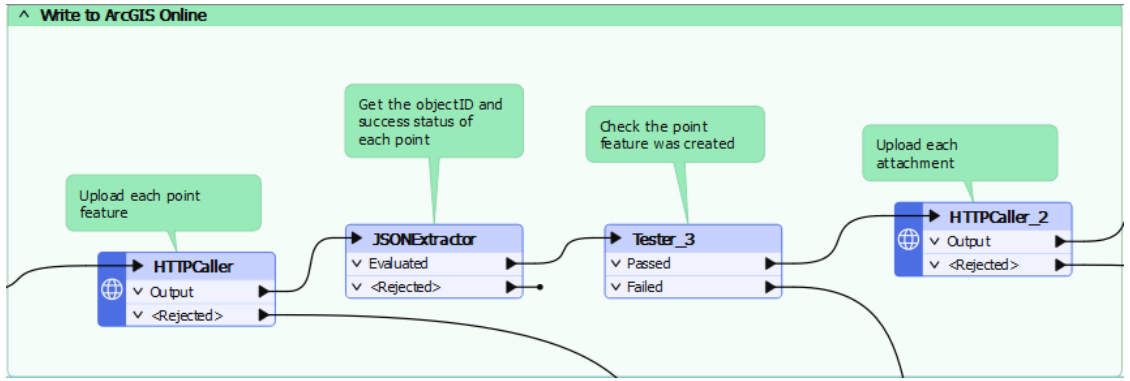




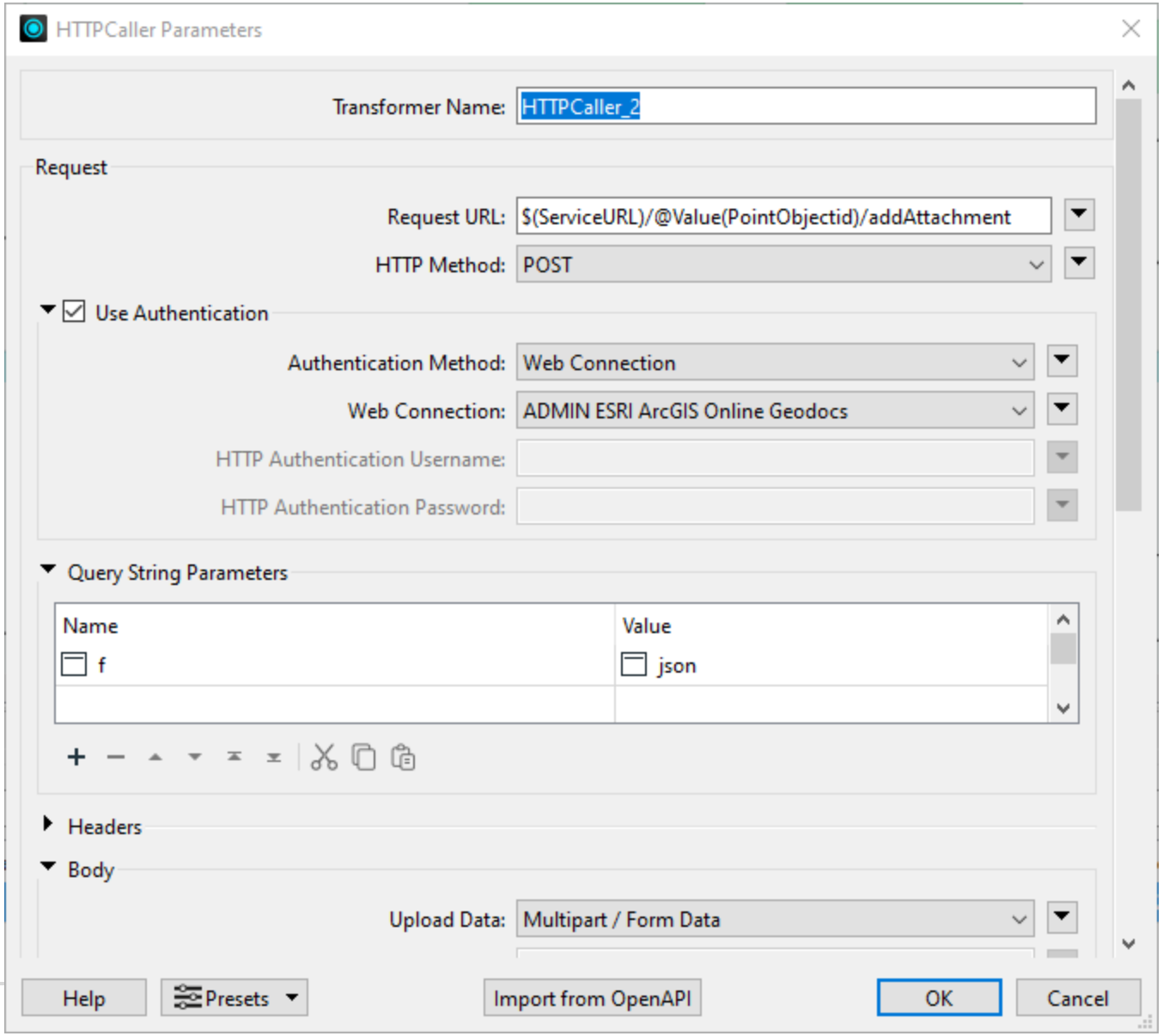


- Use a HTTPCaller with the esri REST api
- But there are other ways:
  - ArcGIS Online Feature Service writer
  - but doesn't support attachments (yet ?) so still need to REST
- Pretty JSON: easier to understand, then linearise with a JSONFormatter

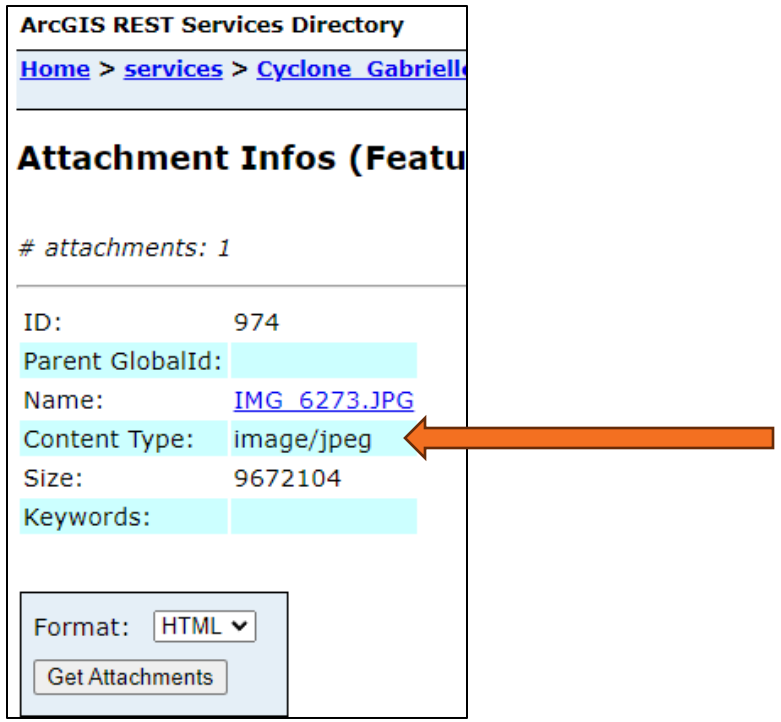
5. Finally: add the points and upload the attachments

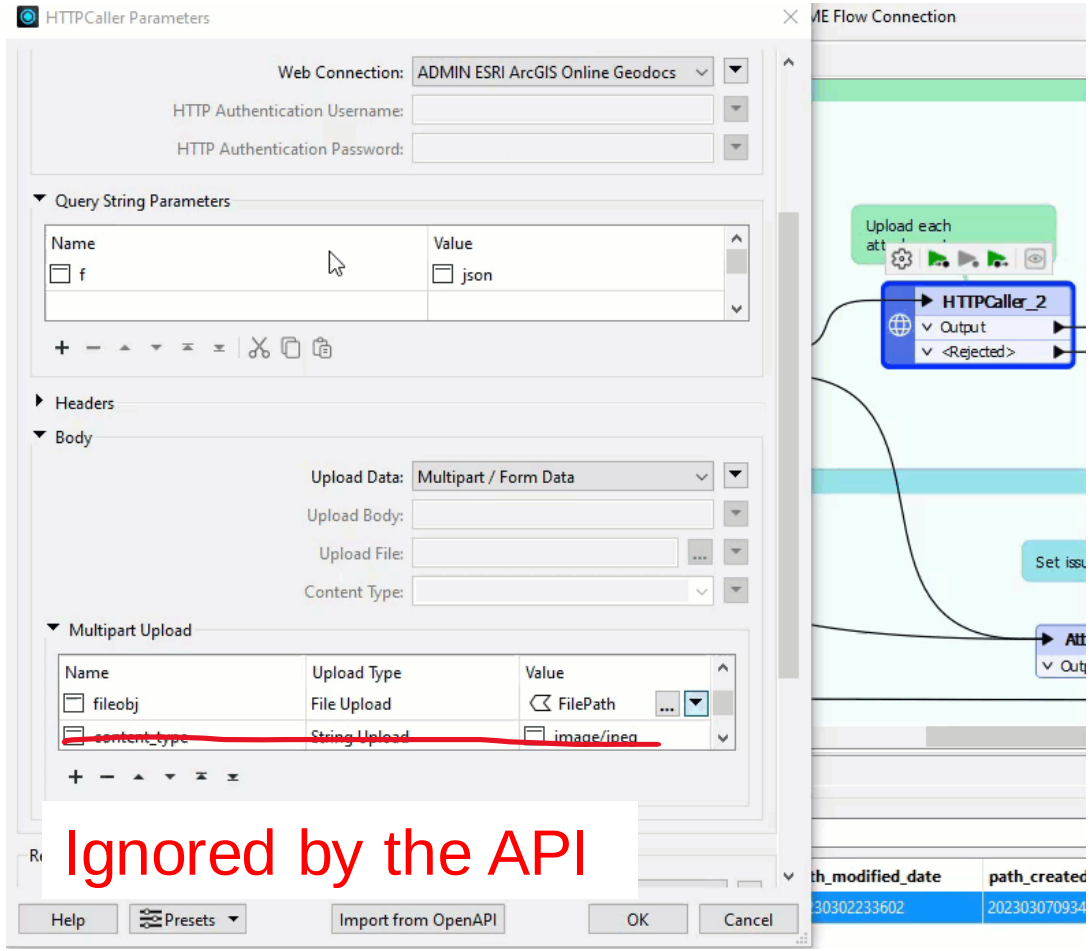


- Use an ArcGIS Online Web Connection to authenticate the HTTPCaller
- With a Multipart / Form Data upload type
- Set the MIME type using a “less than well known” parameter in the HTTPCaller



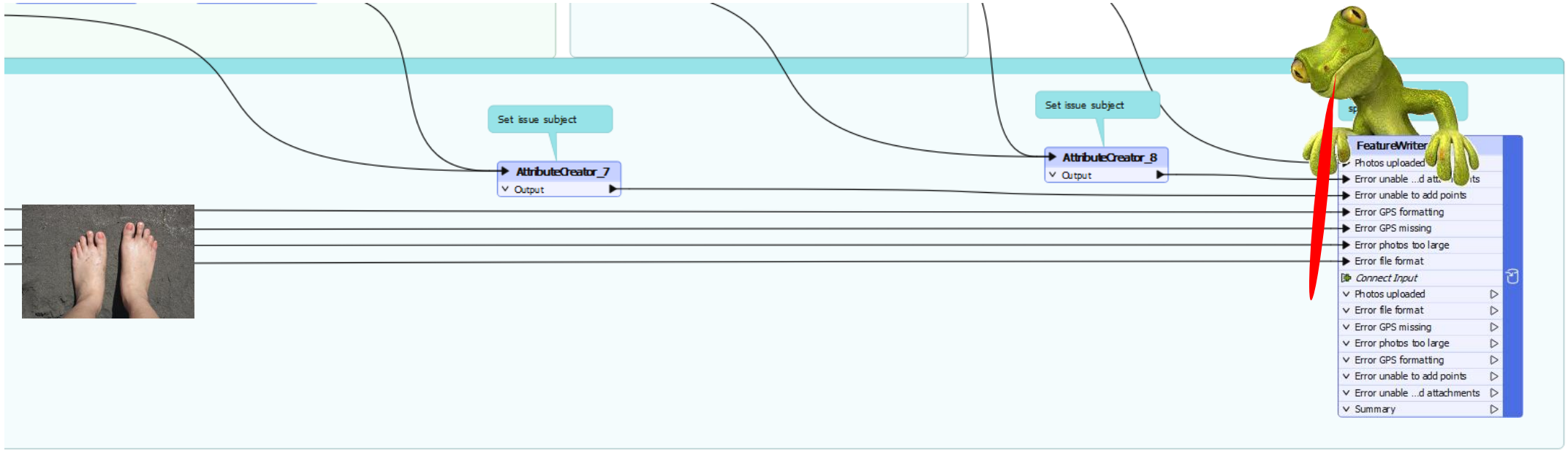
More about MIME types





- Set the MIME type to image/jpeg using the dropdown menu & Edit Parameters
- The content_type attribute is ignored

Error handling



- Consider using a UAT duplicate of your app, map & feature service
- Give errors a meaningful subject then write to a spreadsheet
- To preserve one's sanity, run with ‘Rejected Feature Handling’ set to ‘Continue Translation’
- Then use the spreadsheet to sort through the results
- Switch off feature caching before you process loads of images.

Where to from here?

Next steps

Mobile app for capturing photos

Mandatory GPS (exceptions: tunnels)

Photos upload to Sharepoint then ArcGIS.

Capturing simple photos

esri mobile apps for first responders

Quickcapture

Survey123

Gathering data – Damage assessments

FME Flow

Publish workspace to Flow - app.

Self-service for users to upload images

Maybe? Still reactive though

Another image repository

Low-res preview, high-res somewhere else (Azure?) – cheaper storage

Optimise storage & access

Thank you

andrew.shakes@kiwirail.co.nz

KiwiRail