

2019 Valuation: Membership Data Report

Introduction

We have finalised the data validation stage of the 2019 valuation and have signed off your membership data as being fit for this purpose. We set out below a summary of the membership data that we will be using for the valuation along with any updates and assumptions made to the data during the validation process.

This report is addressed to East Sussex County Council as Administering Authority of the East Sussex Pension Fund (“the Fund”). This report and all data processes used throughout the 2019 formal valuation are compliant (where material and to a proportionate degree) with Technical Actuarial Standards 100 and 300 issued by the Financial Reporting Council.

This report may not be passed on to any third party, except as required by law or regulatory obligation, without the prior written consent of Hymans Robertson LLP. If it is passed onto a third party, then it should be provided in full.

Overview of data at the actuarial valuation

LGPS data collection is very complex and the most important aspect is to ensure each member receives the benefits they are entitled to. However, in order that (i) appropriate contributions are collected from employers to fund these benefits and (ii) risks can be managed in an informed way, our results rely heavily on the quality of the data provided. It is an important and integral part of the process. Please bear the following comments in mind when reading this report:

- Roles and responsibilities of the key parties in the data supply chain
 - *Employers* - their role is to submit accurate and timely data about their employees to the administrator
 - *Administrator* – its role is to process employer data efficiently and correctly. They are responsible for educating employers on what data needs to be supplied and by when.
 - *Actuary* – our role is to ensure that the data supplied is robust enough to undertake the actuarial valuation. We have no direct relationship with employers and no access to the underlying data on the administration system.
- Annual Benefit Statements checks should be more detailed - Our data cleansing checks for the valuation are designed to get the data to an accurate enough state for the purposes of placing a value on the liabilities and setting employer contribution rates. Different and more detailed cleansing would apply if the data was being used for the purposes of Annual Benefit Statements.
- No fund’s data will be 100% accurate – it is not realistic to expect any pension fund to have full and accurate data 100% of the time. There will always be some gaps in the data e.g. due to outstanding information from an employer, or the timing of the data extract. Where required, the actuary therefore needs to make assumptions about any missing data items.
- Materiality of errors - for valuation purposes, data errors tend not to have a material impact on larger employers in the Fund but can be material for smaller employers with few members. Whatever happens, if contribution rates determined at the valuation are too low or too high due to poor data, their impact will be felt at future valuations via lower or higher future funding levels. For long term employers, the fund will have time on its side to address the issue via adjustments to future contribution rates. For short term employers who are close to exiting the fund, additional data cleansing will be carried out as part of a cessation valuation.
- ‘Crystallisation’ events are subject to extra checks – these include cessation valuations and bulk transfer payments. It is important that we get these calculations right, based on fully accurate data, as they involve the

payment of 'real money' and the fund has no recourse to request further money if the data proves to be inaccurate. We do rigorous data checks outside the valuation on these cases.

- 'Critical' errors are not necessarily material errors - our valuation data checks are split into 3 error categories – 'critical', 'range' and 'comparison' (see page 2 for their descriptions). For the avoidance of doubt, 'critical' is used to describe an error that prevents the valuation from running e.g. a missing Date of Birth. A 'critical' error is however not necessarily a material error but simply one that prevents us from valuing that member.

Membership data validation process

Individual membership data as at 31 March 2019 was generated by the Fund in line with the Universal Data Extract (UDE) format and submitted to Hymans Robertson via the Data Portal on 12 August 2019 by the administrator Orbis Business Operations ("Orbis"). Details of the employee contributions and pensions paid over the year 2018/19 were taken separately from the HEAT system to allow us to reconcile the membership data with the financial data.

The process followed during the membership data validation stage was:

- 1 Inspection by the Fund of the 'critical errors', 'range validations' and 'comparison validations' flagged up by the Data Portal
- 2 Discussions between Hymans Robertson, Orbis and the Fund to understand and resolving the critical errors
- 3 Hymans Robertson review of the membership data submitted by Orbis and comparison of employee contributions and pensions paid in 2018/19 implied by the membership data against the actual figures paid.
- 4 Hymans Robertson raised any queries with the Fund from the review and proposed assumptions to apply to the data following responses received to queries
- 5 Final data set agreed and signed off by Hymans Robertson

Data summary

A summary of the membership data at 31 March 2019 at whole Fund level is given below with a comparison to the 2016 valuation data.

	Membership numbers		Total salaries/ pensions (£000)		Total CARE pot (£000)		Average Age (unweighted)	
	2016	2019	2016	2019	2016	2019	2016	2019
Actives	23,156	22,715	384,339	389,485	13,544	31,665	45.7	46.3
Deferreds	31,074	36,097	35,084	42,678	-	-	45.9	46.7
Pensioners	17,986	20,328	90,167	100,398	-	-	70.4	71.0

Membership data validation

Individual record validation

The Data Portal carries out data validations on certain data items in each individual member record. The validations are broken down into three types:

- Critical errors – where data items are missing, at the wrong date, inconsistent with other fields, etc. such that we cannot carry out an actuarial valuation.

- Range errors – where data items are outside an expected range. Some data items that fail these validations may be correct.
- Comparison errors – where data items are not as per expectations based on the data submitted for the 2016 valuation. Some data items that fail these validations may be correct

Please see the validation results spreadsheets in the Data Portal for details on the individual membership queries identified. A list of the parameters used in the Data Portal is provided in Appendix.

Further details about each validation applied to the membership data is set out in the Data Portal User Manual which can be accessed within the Data Portal or provided upon request.

As part of the data validation process we helped Orbis understand the reasons behind the critical errors by producing the paper “East Sussex Pension Fund – Review of 31 March 2019 data cleanse” dated 18 July 2019 providing further details on how to rectify the errors for the initial extract provided on 27 June 2019. As part of these discussions we agreed an approach with the Fund that Orbis would update affected records or bypass the critical errors using suitable assumptions and approximations. The final extract was provided on 12 August 2019 which contained no critical errors.

Orbis also provided an additional “Audit Trail” document which detailed the assumptions that were adopted to clear all critical errors from the extract. Hymans Robertson provided brief commentary regarding the possible risks/impact associated with each assumption.

A summary of the data validation process is given below:

Date	Key actions/events
27 Jun 2019	Initial valuation data provided by Administrator with large number of ‘critical errors’ (e.g. missing data from important fields) and ‘warnings’ (e.g. data outside tolerances or inconsistent with 2016 valuation data) Hymans advised by Fund to do no work on valuation data until critical errors addressed by Administrator
30 Jun 2019	Agreed deadline for submitting final valuation data passes
18 Jul 2019	Hymans commissioned to provide paper setting out guidelines for Administrator to address current errors in the data. Paper to focus on how to address ‘critical errors’ and managing any risks arising from the data ‘warnings’ Fund agrees extension to 31 July for Administrator to address errors
31 Jul 2019	Agreed extended deadline passes without data being submitted Call arranged between Fund, Administrator and Hymans to agree way forward
2 - 12 Aug 2019	Administrator continues work on valuation data and submits data with critical errors cleared using assumptions and adjustments Fund requests a high-level “audit trail” from Administrator of the assumptions and adjustments applied to data in order to review appropriateness (with possible input from Hymans required)

21 Aug 2019	High-level audit trail received from Administrator with notes on assumptions and adjustments applied to data
23 Aug 2019	Hymans asked by Fund to begin standard checks on valuation data and provide comments on Audit trail for Fund to review.
30 Aug 2019	Hymans returns Audit trail with comments for Fund to review
2 Sept 2019	Hymans returns standard data checks feedback (e.g. flagging areas which could result in significant impact on valuation results) for the Administrator and Fund to investigate
3 Sept 2019	Fund requests Hymans proceed with producing initial whole fund results based on data as it currently stands
16 Sept 2019	Initial whole Fund results provided for discussion with Officers Response to standard data checks remains outstanding
26 Sept 2019	Responses received from Orbis and Hymans proposed assumptions to data provided to Fund

Review of submitted data

Individual membership data

Further to the individual record validations carried out by the Data Portal, we also carried out a high level review of the membership data. This review led to some supplementary queries as noted below (along with any resulting actions).

Membership Category	Data Issue	Records affected	Response by Orbis	Action by Hymans Robertson
Active	Records with suggested significant overtime compared to Full Time Equivalent Pay	49	Orbis investigated records and confirmed that Full Time Equivalent pay appeared too low for 10 records. All other cases appeared reasonable	Hymans updated Full Time Equivalent to equal LGPS Pensionable for full time workers. Members flagged with part time indicators underwent the same approach, but scaled depending on part time percentage
Active	Leavers out with inter-valuation period. Majority of records were exit records as at 31 March 2016	202	Orbis confirmed the date of transfer	Exit records as at 31 March 2016 were updated to leave on 1 April 2016. 4 records were updated with revised exit dates
Active	Blank LGPS Pensionable Pay	4	. It was agreed with <u>the Fund</u> to apply the assumptions suggested by Hymans Robertson.	Hymans updated 3 records using the other information available including Full Time Equivalent Salary, Date Joined Fund and Part Time indicator. The remaining record was updated to an LGPS Pensionable Pay of £12k in line with our Data Portal parameters.
Active	In force active records with missing final salary service	58	Orbis confirmed the records were accurate and correct.	No changes applied to the data.
Active	CARE Pot inclusions of transfers in	General query for all records	Orbis confirmed that the standard approach was followed when extracting and uploading the data.	Hymans checked several cases where a transfer amount existed. This looked to be included within the CARE Pot amount provided. Therefore, no changes were applied to the data.
Active	Significantly low LGPS Pensionable Pay (£1.00 or £0.01)	162	It was agreed with <u>the Fund</u> to apply the assumptions suggested by Hymans Robertson.	LGPS Pensionable Pay salaries were updated using the other information available (Date Joined Fund, Full Time Equivalent Pay and Part time indicator). Where this information did not exist, salaries were updated in line with the Data Portal parameters.

Active	LGPS Pensionable Pay greater than £100k	23	Orbis confirmed the data provided was accurate and corresponded to that provided by the Employer.	Hymans checked that all salaries appeared reasonable. No changes were made to the data.
Active	2017/18 Pay information provided for active members and Date of Pay changed to 31 March 2019 to bypass critical error	Unknown	Orbis confirmed that identifying the records updated would not be possible as it was not a requirement.	This was highlighted in the Audit Trail previously prepared by Orbis. Hymans proposed applying salary increases to the members affected, however since the date (and not the salary information) was updated by Orbis in the upload process, Hymans were unable to identify the records and could not scale the salary to the required date of 31 March 2019. No changes were made to the data for these records.*
Active	2017/18 CARE Benefits information provided for active members and Date Accrued CARE Pot changed to 31 March 2019 to bypass critical error	85 (Total known from Audit Trail – individual records affected is unknown)	Orbis confirmed that identifying the records updated would not be possible as it was not a requirement.	Similar to the above, Hymans were unable to identify the members affected from the extract alone. If this was possible, an additional year of benefit accrual would be estimated and allowed for to scale the benefits to 31 March 2019. No changes were made to the data for these records.
Active	Deletion of in force records for members with outdated data	694 (taken from audit trail)	Orbis confirmed that the members were not deleted but were transferred to “Frozen” status.	Hymans used data as provided.
Deferred	Date of Last Pension Increase	General query for all records	Orbis confirmed that the data was directly from the system.	Hymans applied the 2019 pension increase order to members deferred pensions, widow’s pension and lump sums provided as at April 2018.
Deferred	Deferred pensions less than £100	6,462	Orbis confirmed that the data was directly from the system.	Hymans used data as provided.

Deferred	Records with blank deferred partner pensions	107	Orbis confirmed the records affected were entitled to lower benefits.	Hymans assumed the partners pension to be 35% of the members pension.
Pensioner	Date of last pension increase	General query for all records	Orbis confirmed that the data was directly from the system.	Hymans applied the 2019 pension increase order to members pensions, widow's pension provided as at April 2018.
Pensioner	Records with significantly low partners pension compared to member's pension	703	Orbis confirmed that records affected were entitled to lower benefits.	Hymans assumed the partners pension to be 35% of the members pension.
Pensioner	Records with high partner's pensioner compared to member's pension	20	No response provided.	Hymans used data as provided.
Frozen Refund	Records with frozen refunds of over £5k	8	No update.	Hymans used data as provided.
Dependents	Review of child dependent over the age of 25	19	Orbis confirmed the benefit was payable on ground of disability or incapacity.	No changes required to the data.

* Hymans updated the date of last salary increase to be as at 1 April 2018 to apply an overall salary increase to all active members to counteract this issue and following further checks on salaries suggesting an increase was required.

Missing Salaries

Where a record exists with no FTE salary (2008 definition) or actual salary (2014 definition) provided we have estimated these values for the purpose of the 2019 valuation. Therefore, members' LGPS Pensionable Pay was estimated using the part time percentage, date joined fund and full time equivalent pay as noted in the high level

Salary data is summarised at employer level in the reconciliation spreadsheet provided.

Missing Records

Where an exit record exists (i.e. those records that contain a date and reason for leaving their current status) and no follow-on record exists, the Data Portal creates an estimated record based on the information available in the active/deferred member extract. No missing records were generated suggesting records are being processed in an up to date fashion.

Employer level reconciliation

We have compared the membership data supplied against the data used for the 2016 formal valuation at employer level for the purpose of checking high level summary statistics and membership movements. These checks are detailed in our reconciliation spreadsheet which was issued to the Fund on 2 September 2019.

We also compared the employee contributions and pension payments implied by the membership data against the equivalent figures from the 2018/19 HEAT data. We were able to reconcile the employee contributions implied by the membership data with the equivalent figure in the HEAT data to within 7.6% (compared to 4.0% at the 2016 valuation).

The check on the pension paid data revealed that the figure implied by the membership data was 2.1% higher than the equivalent figure from the HEAT data (the 2016 figures were reconciled to within 4.0%).

Other assumptions made in the data

We have calculated retirement ages for active and deferred members with no critical retirement date supplied in the data based on date of birth, qualifying service and date joined fund.

Please note that we have used GMP information as provided in the data.

Overall comments on the data quality and suggestions for next steps

Overall, after the data validation stage, the membership data submitted by the Fund for the 2019 valuation is fit for the purpose of a funding valuation.

Although the data submission and validation stage of the valuation is complete, this output can be used by the Fund to help continue to ensure its data is as complete and accurate as possible. We understand the Fund is putting in place a data improvement plan. This plan will consider not only the data correction work required to improve the membership data at the time of review but also understanding the 'root' problems affecting data quality. Plans should then be put in place to resolve 'root' cause problems.

Other steps the Fund may consider as part of this are:

- Analysing the Data Portal validation results to ascertain if there any employers with a significant amount of validation errors. In these cases, it may suggest that the employer does not have a suitable level of knowledge and/or expertise in terms of understanding what data needs to be submitted to the Fund. The Fund can then carry out a targeted communication to help improve the standard of the employer's data submission. This analysis can be done by using the filter function in the Data Portal validation results spreadsheet (please contact us if further guidance is needed).
- Carrying out annual data cleansing exercises using the Data Portal and reconciling membership data with accounts data.
- Liaising with the Fund's administration software provider to resolve any of the critical errors that are being caused by the UDE extraction programme. If no resolution is possible, understanding the workarounds required to clear these errors to allow the Fund to focus on 'genuine' validation errors.
- To aid both short and long-term improvement, put in place employer training sessions that raise the knowledge levels of scheme employers. This will aid employers as they fulfil their statutory responsibilities.

Assumptions and limitations

Our data validations take the form of range and comparison checks. However, erroneous data can still pass the validations as we cannot compare against the underlying raw data in the administration system (we do not have access to this data). We therefore rely on Orbis to inspect the data to ensure it is clean and accurate before submission. Our valuation calculations are carried out assuming that the data extracted from the administration

system is as specified in the Universal Data Extract. Again, we are unable to verify that this is the case as we do not have access to the underlying raw data stored in the administration system, therefore the responsibility lies with the Fund, Orbis and their data administration software provider to ensure this is the case.

If the data is misreported or contains errors this may lead to a material misstatement of liabilities and contribution rates at either or both Fund and employer level.

Our data validations are set to ensure that the data supplied is fit for purpose for a formal funding valuation only. We have not sought to check or comment on whether the data supplied is compliant with the Pension Regulator's Code of Practice or is fit for any other purpose.

The image shows two handwritten signatures in black ink. The first signature on the left is 'Richard Warden' and the second signature on the right is 'Robert McInroy'. Both signatures are written in a cursive, flowing style.

Richard Warden

Robert McInroy

Fund Actuary

Fund Actuary

For and on behalf of Hymans Robertson LLP

November 2019

Appendix A: Data Portal details

The following tables provide a summary of the data portal inputs and the validation parameters used.

Job details

Job details	Value
Job ID	9187
Job type	Fund valuation (triennial)
Client	East Sussex Pension Fund
Created at	17 June 2019 09:13:30
Valuation date	31 March 2019
Valuation data date	31 March 2016

Upload info

Upload info	Value
File name	Upload- post queries ESPF 2019 Valuation.xlsx
Uploaded at	02 October 2019 12:40:27
Validation version	3.2.10

Validation parameters

Name	Value
Active/Deferred age (years)	16 (inclusive) to 70 (inclusive)
Pensioner age (years)	55 (inclusive) to 100 (inclusive)
Child age (years)	0 (inclusive) to 21 (inclusive)
FTE salary (£)	10,000 (inclusive) to 100,000 (inclusive)
Actual salary (£)	1,000 (inclusive) to 100,000 (inclusive)
Pension/Deferred Pension (£)	100 (inclusive) to 50,000 (inclusive)
Additional Pension (£)	0 (inclusive) to 10,000 (inclusive)
CARE Pot Range (£)	0 (inclusive) to 5,000 (inclusive)
GMP Range (£)	0 (inclusive) to 20,000 (inclusive)
Part-time hours (%)	5% (inclusive) to 100% (inclusive)
Current member contribution rate (%)	3 (inclusive) to 20 (inclusive)
Entitlement service v DJF tolerance (years)	1.00
80th calculation service tolerance (years)	0.10
60th calculation service tolerance (years)	0.50
CARE entitlement service tolerance (years)	0.50
Estimated Actual (2014 definition) Salary (£ p.a.)	18000.00
Estimated FTE (2008) Salary (£ p.a.)	12000.00
Salary increase tolerance (%)	15%
Salary decrease tolerance (%)	5%
Pension/Deferred Pension tolerance (%)	10%
Spouse Pension as % of member pension	35%
Valid ages at critical retirement date (years)	55 (inclusive) to 65 (inclusive)
Valid ages at taper protection date (years)	55 (inclusive) to 65 (inclusive)

Missing records created for this upload

Record type	Follow-on records created
Deferred from active	0
Pensioner from active	0
Pensioner from deferred	0

Number of records (including missing records)

Type	Count
ACT	35,611
DEF	33,599
PEN	19,144
FZN	5,909
DEP	3,126

Appendix B: Comparison of 2019 Data Quality against 2013 & 2016 valuation

Below is a summary of the data validations of both the **initial** extract (raw data taken directly from the Altair system) and the **final** extract uploaded by Orbis for the purposes of the 2016 and 2019 valuation. Please note that there must be no critical errors in the data for it to be submitted to Hymans Robertson.

2016 Valuation

Initial Extract (Raw data)

The below provides an indication on the total errors and validation warnings taken directly from the Altair system:

Active	Deferred	Pensioner	Dependant	Frozen	
6376	3479	1550	337	487	Critical errors
63757	20722	2700	362	4585	Warnings
6525	2483	2434	187	435	Warnings

Cleansed Extract

Orbis cleansed the extract to remove the critical errors until the final extract free of errors was provided, a summary of this extract is provided below:

Active	Deferred	Pensioner	Dependant	Frozen	
0	0	0	0	0	Critical errors
59414	20681	2720	363	4585	Warnings
6525	1918	1967	138	435	Warnings

2019 Valuation

Initial Extract (Raw data)

The below provides an indication on the total errors and validation warnings taken directly from the Altair system for the 2019 valuation:

Active	Deferred	Pensioner	Dependant	Frozen	
3597	236	358	73	44	Critical errors
20238	20320	10809	400	4418	Warnings
39803	24694	14463	6	3549	Warnings

Cleansed Extract

Orbis cleansed the extract to remove the critical errors until the final extract free of errors was provided, a summary of this extract is provided below:

Active	Deferred	Pensioner	Dependant	Frozen	
0	0	0	0	0	Critical errors
18322	20211	10568	392	5855	Warnings
40565	24258	14228	6	3506	Warnings

Comments

From the raw extracts provided, the total number of critical errors has decreased from 12,229 critical errors at 2016 to 4,308 critical errors at 2019. The total number of validation warnings has increased from 104,191 to 138,700 warnings.

A data cleansing exercise was performed as at 31 March 2018 for the purposes of contribution rate modelling. The initial extract for this exercise contained 4,555 critical errors showing that the number of critical errors has been reducing since 2016.

By comparing the final extract between the 2016 and 2019 valuations, the total number of range “orange” warnings has decreased from 87,763 to 55,348. However, the total number of consistency “blue” warnings has increased from 10,984 to 82,563. Blue warnings check for consistency in data between valuations so the increase suggests that more data has changed than expected. This could be due to data cleansing and 2019 being more accurate than 2016 or vice versa.

Please note, this measure of totalling validation warnings is a crude metric to measure overall data quality. It is difficult to draw conclusions on overall data quality as there could be some cases of inaccurate data that will not be captured in the above summaries if they did not flag an error/validation.

The 2019 data quality can be reviewed from the information provided in the tables above where Hymans Robertson adopted assumptions to make the data fit for purpose of the 2019 valuation. This should be read in conjunction with the 2016 and 2013 data reports produced to gain an overall insight on movements between 2013, 2016 and 2019.

2013 Valuation

At the 2016 valuation, Hymans Robertson introduced the Data Portal as a method for the Fund/Orbis to review all data validations at once and highlight any areas that may require further investigation. The validations are carried out in real time which allows for more efficient reporting of the errors to the fund.

Prior to this, valuation data was submitted to Hymans Robertson for cleansing and reporting back any queries to the fund. Part of the process was for the errors in the data to be filtered and condensed into two categories as follows:

- **For action** – This type of validation was highlighted to the Fund for consideration and required an update before the data was considered fit for purpose for the valuation calculations.

- **For information** – This type of validation was highlighted to the Fund only for informational purposes. Errors may have been present in this group of validations but, in a similar way to the warnings in the data portal, no action was required as the impact on the valuation was less material.

Hymans Robertson provided a summary of the membership data for the 2013 valuation, which detailed these errors and highlighted which records “passed” or “failed” the validation. Validations that “failed” required consideration from the Fund. A summary of the 2013 validations is provided below:

Number of instances	For Action Validation	For Information Validation
Passed	453,686	126,483
Failed	14,005	22,074

Please note, the checks performed for the 2013 valuation are similar to the checks that are now performed by the Data Portal. However, there is a difference in how these are reported between 2013 and 2016/2019 (a “for action” failed error may either be a critical error or validation warning in 2016/2019 terms depending on which field the error relates to). Therefore, the above figures are not directly comparable to the validation summaries provided for 2016/2019 but can provide insight to the cases that required further investigation.

Inter-valuation Employer Work

During the inter-valuation period, Hymans Robertson will perform standard calculations if an employer is either admitted to the Fund or ceases participation in the Fund. Due to the difference in quantities of members involved in these calculations, more detailed data checks can be performed on an individual member basis. Following from this, the “blue” warnings generated from the Data Portal flag if there is any information provided that does not appear consistent with the previous triennial valuation. For ceasing employers, there has been an increasing number of cases where the previous triennial valuation has required a retrospective update following membership data not being accurate or correct, causing delay in the processing of standard calculations.