WP #	CASU WP name /sub task / 05Q4m2 deliverables	Staff	Prog 05Q1	Prog 05Q2	Prog 05Q3	Prog 06Q1	Prog 06Q2	Textual Summary
1	**Management and definition of project responsibilities**							
1.1	report to VISTA, UKIDSS, JAC, ATC, GSC	all	17	25	34	52	61	
	provide fortnightly meeting minutes, monthly reports on progress + quarterly review reports and planning. Produce draft functionality document for VDMT & VDUC. Have telecons as required with JAC							held minuted CASU meetings. Attended VDMT meeting @ROE in April. MJI gave presentation of CASU progress on WFCAM data processing to UKIRT board in hertfordshire on 23rd May.
1.2	interface control document between CASU and JAC	MJI	100	100	100	100	100	completed
1.3a	interface control document between CASU and WFAU (WFCAM)	MJI	100	100	100	100	100	completed
1.3b	interface control document between CASU and WFAU (VISTA)	PSB	0	0	0	0	0	
	liaise with WFAU, camera and telescope team for design of VISTA FITS headers for input to ICD							no progress
1.4a	define WFCAM data structures and FITS headers	MJI, JRL, PSB	100	100	100	100	100	completed
1.4b	update proposed VISTA FITS headers as necessary	PSB	10	20	30	40	50	
	monitor and update proposed VISTA FITS headers. give feedback on test FITS files. test conformance of output FITS files with ICD.							Tested lab data FITS headers and reported issues with NEXPO in jitter sequences. Analysed serious bug in WCS during offsetting
1.5a	define WFCAM observing protocols	STH, DWE	55	60	70	75	75	nothing to report
	monitor and update MSB guidelines. monitor observing efficiency and report.							
1.5b	define VISTA observing protocols	PSB	15	20	25	30	30	
	liaise with development team							nothing to report
1.6a	liaise with UKIDSS&JAC on WFCAM obs strategy, surveys planning	STH	40	50	60	70	70	
	liaise and monitor progress							nothing to report
1.6b	liaise with Proj. Sci. on VISTA observing strategy & survey planning	PSB	17	25	34	52	52	
	liaise and monitor progress							nothing to report
1.7a	liaise with VDUC on VDFS products for WFCAM	STH, MJI, JRL	50	55	60	70	75	
	liaise and monitor progress. finalise reports on results from WFCAM 05A SV data. Provide input for UKIDSS papers. Respond to issues raised re: data processing							finished updating 05A SV report. Provided more input to UKIDSS papers describing EDR and DR1. Investogated various issues raised RE processing.
1.7b	liaise with VDUC on VDFS products for VISTA	MJI, STH	17	25	34	40	40	
	liaise and monitor progress. assess and prioritise work required for extra UK VDFS products. revisit WPs for V1-5 in lieu of above							nothing to report
1.8a	liaise with UKIDSS and JAC on survey progress DB (WFCAM)	JRL	50	50	55	60	65	
	maintain OMP database mirror to be used with survey progress database, incl. simplified user interface and script to add MSB flags to processed data headers							All connectivity problems resolved. More tables are now being mirrored. In discussions with JAC about problems in flagging bad data.
1.8b	liaise with VDUC and ESO on survey progress DB (VISTA)		0	0	0	0	0	no direct progress, but the prototpe WFCAM survey progress DB continues to be developed
1.9	system documentation	DWE,EGS,MR	17	25	34	52	61	
	update and maintain web pages of system docs. Setup and switch over to new plone system							significant overhaul and testing of the new plone system continues. Internal pages rationalised and reorganised
2	**ESO VISTA software interface deliverables and documentation**							
2.1	DFS impact document	PSB	70	80	95	100	100	signed and sealed
	assess if further changes needed after tests							

2.2	Calibration Plan document	PSB	70	80	95	95	95	
	update document in parallel with DRL development. Get c1.2 signed by PS, PI							no progress
2.3	Data Reduction Library Design document	PSB	70	80	95	95	95	
	update document in parallel with DRL development							intensive testing/debugging of library, document corrections. V0.3 delivered to ESO, including set of test data.
2.4	Data Reduction Library							subsumed into 8.1b
	produce v0.1 of DRL and test in CPL environment							
2.5	ICD ESO/VPO	PSB	0	5	10	15	20	
	update FITS header doc and DID/DIC and data dictionary files							ESO dryrun meeting. Handled a number of DFS PRS tickets on DRL v0.2 and v0.3
2.6	Instrument specification and interface documents	PSB	0	6	6	10	10	
	develop integration tests in CPL & QFITS environment							nothing to report
2.7	Delivery software modules for exposure time calculator	STH, PSB	20	60	90	95	96	
	setup UK-based demonstration of ETC. Update ETC with better characteristic data. Deliver ETC calculation modules and instrument description data to ESO							digitising charts to produce tabular data for delivery to ESO
2.8	liaise with VISTA IR camera development team	PSB	8	25	35	52	60	
	continue liaising with VISTA IR camera development team. Use data from RAL operation of VIRCAM and TCS simulator to assess VIRCAM system. Test successive simulators, feedback comments							Continued testing debugger simulator. Reported discovered vircam bugs (offsets/NEXPO). Visited RAL and participated in a day's "observing".
2.9	Development of DQC measures	PSB	0	5	10	10	15	
	update QC measures as needed in light of test data							began analysis of test data
2.10	Documents for software modules	PSB	0	0	0	25		subsumed into 8.6b
3	**Pipeline infrastructure and pipeline progress monitoring tools**							
3.1	interactive tools for running pipeline	JRL	60	75	75	75	75	
	update tools in the light of 05A, 05B experience and document							no progress
3.2	high level scripts to interrogate headers	MR, EGS	50	60	80	80	80	
	update header interrogation scripts and test							no progress
3.3	automatic progression of results to web pages	MR	50	55	65	65	65	
	maintain and update web-based pipeline progress web page							no progress
3.4	automatic checks to spot failure of pipeline	JRL	0	20	35	35	70	
	continue developing automated checks for pipeline failures							pipeline failures now readily dealt with
3.5a	Tools for fixing problem datasets (WFCAM)	JRL	20	25	25	35	60	
	continue developing tools to handle problems in WFCAM data							various improvements made to handle problem data including completely missing files and data unexpectedly full of nulls
3.5b	Tools for fixing problem datasets (VISTA)		0	0	0	0	0	on hold
3.6	group documentation on pipeline infrastructure	STH, JRL	60	60	65	65	65	
	stress test documentation and update as necessary							no progress
3.7a	Oversee reprocessing WFCAM data after bug fixes/improvements	MR	0	30	45	55	65	
	reprocess science data from 05A, 05B as necessary							reprocessed some UDS data from 05B and finished reprocessing 05A data
3.7b	Oversee reprocessing VISTA data after bug fixes/improvements		0	0	0	0		removed and subsumed in 6.8a
4	**Set up and manage raw science archive**							
4.1	extend UKIRT archive to cope with WFCAM data	JRL, MR	50	65	70	80	85	
	manage WFCAM raw data archive. Manage and monitor WFCAM-ESO raw data transfers							updating WFCAM archive as needed and monitoring transfers to ESO
4.2a	Ingest and verify WFCAM data	MR, MJI	10	25	30	45	55	
	ingest and verify 06A							ingested up to 5th July, processing up to 17th June
4.2b	Ingest and verify VISTA data		0	0	0	0	0	on hold
5	**Set up and manage data processing system hardware**							
5.1	Investigate alternatives (benchmarking, reliability etc)	MJI, PSB, JMI	100	100	100	100	100	completed

5.2	buy hardware and install	PSB, JMI, MJI	50	100	100	100	100	completed
5.3	integrating and testing	PSB, JMI	50	100	100	100	100	completed
5.4	Manage day-to-day maintenance and upgrades	PSB, JMI	17	25	34	52	61	
	continue maintenance and upgrade programme. Investigate new external bulk storage devices							arranged purchase of Uklight kit with CUDN and sorted out how to deal with local installation. Continued maintenance, supervised installation of extra air conditioning, rack mounted 3 disk server systems in store room , moved noisiest two disk servers from common area to racks in store room
5.5	Hardware additions for further processing system		0	0	0	5	10	
	monitor need for extra hardware for further processing	MJI						initiated upgrade of apm12 into processing system to be used for further processing duties.
6	**Run standard pipeline**							
6.1a	Update WFCAM master calibration frames	MJI, JRL	0	9	18	36	45	
	continue updating and testing calibration frames							New master flats and confidence maps created as required
6.1b	Update VISTA master calibration frames		0	0	0	0	0	on hold
6.2a	Monitor detector performance WFCAM	JRL, MR	0	9	18	36	45	
	monitor with 05A and 05B data							monitored as part of QA checks
6.2b	Monitor detector performance VISTA		0	0	0	0	0	on hold
6.3a	oversee standard processing WFCAM	MR	0	9	18	36	45	
	process 05B data							05B data processed - now processing 06A
6.3b	Oversee standard processing VISTA		0	0	0	0	0	on hold
6.4a	Astrometric calibration WFCAM	MJI	0	9	18	36	45	
	(re)calibrate 05A and 05B data							ongoing
6.4b	Astrometric calibration VISTA		0	0	0	0	0	on hold
6.5a	Photometric Calibration WFCAM	STH	0	9	18	36	45	
	calibrate using 2mass and continue developing secondary standards system, Ces etc							all data reclaibrated using restricted colur range, now investigating 1st order correction to deal with effects of galactic extincion on Z- and Y-band calibration
6.5b	Photometric Calibration VISTA		0	0	0	0	0	on hold
6.6a	Verify Science products and monitor DQC measures WFCAM	EGS, MJI	0	9	18	36	45	
	assess 05A and 05B data							SV of products ongoing see http://apm15.ast.cam.ac.uk/casudocs/wfcam/science-verification. And SV report at http://www.ast.cam.ac.uk/~wfcam/docs/reports/sv/index.html.
6.6b	Verify Science products and monitor DQC measures VISTA		0	0	0	0	0	on hold
6.7	Monitor data product transfer to WFAU	MR, MJI	0	9	18	36	45	
	continue data transfer to WFAU and monitor							Interacted with ATC, Cambridge CS & UKLight regarding networking and with ATC over high-performance networking over JANET. Ordered connection requisites for Cambridge end.
6.8a	Reprocess WFCAM data	MR	0	9	18	36	45	
	reprocess if major bug fixes							reprocessed 05A, reprocessed selected 05B
6.8b	Reprocess VISTA data		0	0	0	0	0	on hold
7	**Development work for summit pipeline**							
7.1a	Interface test pipelines in ORAC-DR	JRL	100	100	100	100	100	completed

7.1b	Interface test pipelines to VISTA summit DR	JRL	0	0	0	10	20	End-to-end test done at ESO using v0.3 of the pipeline
7.2a	implement WFCAM pipeline at summit	JRL	75	80	90	100	100	completed
7.2b	Implement VISTA pipeline at summit	JRL	0	0	0	0	0	on hold
7.3a	documentation for ORAC-DR interface	JRL	60	60	60	100	100	completed
	update and deliver documentation as development proceeds							
7.3b	documentation for interface VISTA	JRL	0	0	0	0	10	
								Documentation being written as modules and recipes are developed
7.4a	upgrade and maintain summit pipeline WFCAM	JRL	17	25	40	55	55	
	update and maintain as required							no further work
7.4b	upgrade and maintain summit pipeline VISTA	JRL	0	0	0	0	0	on hold
8	**Development and testing of standard 2d processing**							
8.1a	further development of standard pipeline for WFCAM	JRL,DWE	80	80	85	90	95	
	update and maintain as required. Assess persistance characteristics and develop trial version							Enhanced sky subtraction algorithm implemented. Discussions with CFHT engineers regarding persistence on WIRCam and comparing it with the WFCAM experience. Looked at VIRCAM persistence, but not enough data.
8.1b	development of VISTA specific packages	JRL	0	0	30	45	55	
	continue development of DRL. Continue testing of DRL in CPL environment. Release version 0.1 CPL recipes and modules. Release minor version updates as required prior to 0.5. Liaise with ESO on integrating and commissioning modules into pipeline environment							Version 0.3 of the pipeline released to ESO. Much error spotting and bug fixing done.
8.2a	liaison with WFCAM development team	JRL	8	25	34	52	61	
	continue telecons and discussions.							telecons and email discussions continue
8.2b	liaison with Project Scientist & VISTA development team	PSB	8	25	34	52	61	
	assess any new detector engineering test data							Preliminary reports being prepared on AIT data
8.3a	partake in planning WFCAM commissioning observations	STH	80	100	100	100	100	WFCAM commissioning completed
8.3b	partake in planning VISTA commissioning observations	STH	0	0	0	10	10	
	liaise and discuss with camera PS and VISTA PS, find out about current							no progress
8.4a	Participate directly in commissioning WFCAM	STH	50	100	100	100	100	completed
8.4b	Participate directly in commissioning VISTA	STH	0	0	0	0	0	on hold
8.5a	Tuning pipeline during commissioning and after WFCAM	MJI, STH, EGS	20	40	40	70	80	
	keep on tuning as newer data comes in. further assessment of the quality and stability of master calibration data. assess quality of science output							More tests completed on alternative sky subtraction algorithms
8.5b	Tuning pipeline during commissioning and after VISTA	MJI, JRL, EGS	0	0	0	0	0	on hold
8.6a	documentation for 2D processing software WFCAM	JRL, MJI	50	50	50	70	80	
	update docs as necessary. Write data processing technical description paper							documentation updates match additional development. Paper in preparation
8.6b	documentation for additional 2D processing software VISTA	JRL	0	0	30	40	50	
	document within recipe and module C code in doxygen compatible format							documentation added as code is written
8.7	Comparison between automated and manual data products	STH	50	50	55	70	75	
	assess CASU processed WFCAM SV data in conjunction with CSV and Survey							various reported problems analysed, carrying out tests on deep stacked data
9	**Development and testing of standard catalogue products**							
9.1	add in new measures requested	MJI	60	60	100	100	100	completed
	monitor and tune if needed							

9.2a	refine astrometric calibration model	MJI	85	85	85	90	90	
	refine astrometric model							no further progress
9.2b	refine astrometric calibration model - VISTA specific	MJI	0	0	0	0		on hold
9.3	generate model simulations of expected data	STH	100	100	100	100	100	completed
9.4	assess catalogue parameter reliability	MJI	70	70	80	100	100	completed - assessment finished in conjunction with SV and CASU internal tests
	refine parameter error estimates and check for systematics in new params, finish in conjunction with 9.1							
9.5	intercomparison of catalogue products with other packages	MJI	100	100	100	100	100	completed
9.6	Completeness	MJI, EGS	0	10	40	40	40	
	design and report on completeness model, check completeness [9.6] and error estimates and parameter reliability [9.4]							no further progress
9.7	documentation of catalogue software and products	MJI	55	55	60	70	75	
	update catalogue products documentation							technical paper being drafted
10	**Setup trial and run further processing pipeline**							
10.1	Manage and run further processing stages		0	0	0	0	0	still awaiting PSF v1,2 development completion
10.2	development and assessment of PSF options 1,2	DWE	60	65	75	85	85	
	run prototype code for PSF levels 1,2 on 05A data							Further PSF investigations looking at PSFs varying between microsteps. See http://www.ast.cam.ac.uk/vdfs/docs/reports/psf3/
10.3	develop 1D/2D PSF-deconvolved Sersic profile fits	MJI	0	0	0	0	0	
	prototype methods for Sersic profile fitting							paused, awaiting implementation of PSF fitting
10.4	Develop LSBG/nebulosity detection/parameterisation	MJI	0	0	0	0	0	
	investigate feasibility of nebulosity detection							waiting for results of improved sky subtraction
10.5	Full iterative profile fitting for stellar images		0	0	0	0	0	paused
10.6	Develop and optimize Bayesian image classification	MJI	0	10	30	40	40	
	trial Bayesian classification schemes							no further progress
10.7	Modeling and simulations of further processing steps		0	0	0	100	100	completed
	modelling and simulations of further processing steps. Simulate WFCAM data and use							
11	**Photometric standards and calibration**							
11.1	Agree on primary standards (WFCAM + VISTA)	STH	90	100	100	100	100	completed
11.2	Choose secondary standards (WFCAM + VISTA)	STH	80	80	80	80	85	
	add in last few proposed standards and update doc							acquired 2MASS touchstone fields for use as secondary standard fields
11.3a	take part in commissioning observations WFCAM	STH	10	100	100	100	100	phase II on-sky characterisation - completed
11.3b	take part in commissioning observations VISTA	STH	0	0	0	0	0	on hold
11.4a	Reduce data, compute zero points and colour equations WFCAM	STH	15	25	60	80	85	
	compute WFCAM photometric zeropoints from commissioning data. update colour terms relative to 2MASS and UKIRT FS. Write paper							slight revision to calibration using restricted colour range in 2MASS currently being tested + implemented. Paper outline drafted. Testing and implementing Galactic extinction correction for Z- and Y-band data
11.4b	Reduce data, compute zero points and colour equations VISTA	STH	0	0	0	0	0	on hold
11.5	Update, maintain and extend secondary standards system	STH	0	0	0	0	0	
	begin building secondary standard fields system							no progress (2MASS calibrators working well)
11.6	Investigate photometric calibration field systematics WFCAM+VISTA	STH	0	0	30	60	60	
	stack 2MASS residuals and assess							no progress

11.7	assess extinction monitoring methods and develop measures	STH	50	50	60	70	90	
	use 2MASS comparison to get first order estimate and assess expected accuracy in light of results from UKIRT FS							per-night and per-frame measures of the photometric calibration accuracy now included in the FITS headers
12	**Further development of DQC measures at summit and Cambr**							
12.1	develop extra systematic noise measures	MJI	50	75	80	80	80	
	finished for WFCAM; awaiting VISTA test files							data in hand, awaiting results of analysis
12.2	Refine current measures for WFCAM/VISTA data	JRL, MJI	20	25	40	65	70	
	continue monitoring the DQC assessment by visually checking random sub-sample							monitoring for 06A
12.3	implement 2mass for throughput measurement	JRL	75	100	100	100	100	implemented local access version at summit - completed
12.4	master calibration frames for detector monitoring	JRL, MR	35	40	60	80	80	
	continue monitoring using 05A and 05B WFCAM data							no further work
13	**Co-located list driven photometry**							
13.1	test methods for master catalogue generation	MJI	100	100	100	100	100	completed
13.2	develop basic WCS-based list driven photometer	MJI	90	90	95	97	100	completed
	test 80 parameter set (subsumes 13.3)							development completed, to be implemented in pipeline
13.3	externally driven WCS photometry and define parameter set	MJI	75	75	95	100	100	completed
	extend to full 80 parameter set							
14	**Stacking and mosaicing**							
14.1	develop benchmark simple stacking/mosaicing framework	MJI	100	100	100	100	100	completed
14.2	NN algorithm with simple rejection	MJI	100	100	100	100	100	completed
14.3	More sophisticated rejection dealing with pixilation	MJI	100	100	100	100	100	completed
14.4	Stacking with optimum weighting and defect rejection	MJI	25	25	25	35	35	
	refine using WFCAM deep survey data and optical data. Trial different interpolation options for WFCAM deeps surveys							no further progress
14.5	Advanced stacking/image restoration for variable PSF	MJI	0	0	0	10	15	
	investigate alternatives as part of UK design review							investigated Magain et al. methodology
15	**Continuum subtraction and basic difference imaging**							
15.1	Simple WCS-based subtraction techniques	MJI	100	100	100	100	100	completed
15.2	investigate and apply different interpolation methods	MJI	100	100	100	100	100	completed
15.3	develop adaptive kernel matching option	MJI	80	80	80	85	85	
	continue debugging and enhancements to adaptive kernel package							working well
15.4	time series photometry	STH	20	20	50	70	70	
	test with WFCAM photometry							no progress
16	**Interpolation techniques and PSF modeling**							
16.1	investigate alternative interpolation/PSF schemes	DWE	100	100	100	100	100	completed
16.2	implications for different stacking methods	DWE	20	25	30	100	100	completed - further dev in 14.4
	trial different stacking options for WFCAM deep surveys							
16.3	implications for deriving catalogues and parameters	DWE	70	75	80	85	90	
	finish testing of astrometric refinement code							More simulations carried out.
16.4	oversampled PSF generation per detector	DWE	100	100	100	100	100	completed
16.5	develop oversampled spatially varying PSF model	DWE	20	25	30	30	30	
	asess if spatially varying PSF model required, test on 05B data							on hold until further tests of 05B data with v1,2 simple single PSF model completed