WP	CASU WP name /sub task / 05Q4m2 deliverables	Staff	Prog	Prog	Prog	Prog	Textual Summary
#			05Q1	05Q2	05Q3	06Q1	
1	**Management and definition of project responsibilities**						
1.1	report to VISTA, UKIDSS, JAC, ATC, GSC	all	17	25	34	52	
	provide fortnightly meeting minutes, monthly reports on progress + quarterly review reports and planning. Attend, prepare for and give talks at UKIDSS, VDUC meetings. Produce draft functionality document for VDMT & VDUC. Have telecons as required with JAC						held minuted CASU meetings. Attended VISTA VHS, VPHAS planning meetings, helped prepare assorted VISTA public survey proposals
1.2	interface control document between CASU and JAC	MJI	100	100	100	100	completed
1.3a	interface control document between CASU and WFAU (WFCAM)	MJI	100	100	100	100	completed
1.3b	interface control document between CASU and WFAU (VISTA)	PSB	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	completed
1.4b	update proposed VISTA FITS headers as necessary	PSB	10	20	30	40	
	monitor and update proposed VISTA FITS headers. give feedback on test FITS files. test conformance of output FITS files with ICD.						fedback comments on FITS headers; liaised with VIRCAM team on test data required and wrote wishlist document. Wrote a detailed note arguing the case for a fixed ordering of the FITS extensions.
1.5a	define WFCAM observing protocols	STH, DWE	55	60	70	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	
	liaise with development team						disucssed twilight flatfield and linearity strategy with SMB
1.6a	liaise with UKIDSS&JAC on WFCAM obs strategy, surveys planning	STH	40	50	60	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	
	liaise and monitor progress						nothing to report
1.7a	liaise with VDUC on VDFS products for WFCAM	STH, MJI, JRL	50	55	60	70	
	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						reports updated. Input provided for UKIDSS papers: survey & EDR.
1.7b	liaise with VDUC on VDFS products for VISTA	MJI, STH	17	25	34	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	
	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						fixed, with JAC help, assorted problems with OMP mirror; script written to extract MSB information from database but needs upgrade to OMP database (in progress) before can implement
1.8b	liaise with VDUC and ESO on survey progress DB (VISTA)		0	0	0	0	no progress
1.9	system documentation	DWE,EGS,MR	17	25	34	52	
	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
1.10	VST processing preparation	EGS, MJI	0	10	15	25	
	help produce draft Survey Management Plan for ATLAS, VPHAS+						survey management plan written for VPHAS+ in collaboration with PI and NAW; this provides the first draft for the ATLAS proposal.
2	**ESO VISTA software interface deliverables and documentation**						
2.1	DFS impact document	PSB	70	80	95	100	signed and sealed

	assess if further changes needed after tests						
2.2	Calibration Plan document	PSB	70	80	95	95	
	update document in parallel with DRL development. Get c1.2 signed by PS, PI						updated in parallel with DRLD changes; distributed draft v1.3 to support DRL v0.1; met with Cohen re. absolute calibration
2.3	Data Reduction Library Design document	PSB	70	80	95	95	
	update document in parallel with DRL development						DRLD document is being updated in line with DRL development
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	
	update FITS header doc and DID/DIC and data dictionary files						negotiated SPR re: FITS extension ordering
2.6	Instrument specification and interface documents	PSB	0	6	6	10	
	develop integration tests in CPL & QFITS environment						various tests being developed for the delivered DRL recipes
2.7	Delivery software modules for exposure time calculator	STH, PSB	20	60	90	95	
	setup UK-based demonstration of ETC. Update ETC with better characteristic data. Deliver ETC calculation modules and instrument description data to ESO						UK ETC setup and released to the unsuspecting public; better characteristic data tables produced and added. ETC modules, tables and document (v1.1), C code and current characteristic delivered to J. Vinther at ESO.
2.8	liaise with VISTA IR camera development team	PSB	8	25	35	52	
	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						much discussion on FITS headers and FITS data ordering. Tested data. Fixed WCS and detector IDs in AIT data, so images display physically.
2.9	Development of DQC measures	PSB	0	5	10	10	
	update QC measures as needed in light of test data						no progress
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	
	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	
	update header interrogation scripts and test						no progress
3.3	automatic progression of results to web pages	MR	50	55	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	
	continue developing automated checks for pipeline failures						no progress
3.5a	Tools for fixing problem datasets (WFCAM)	JRL	20	25	25	35	
	continue developing tools to handle problems in WFCAM data						ongoing
3.5b	Tools for fixing problem datasets (VISTA)		0	0	0	0	on hold
3.6	group documentation on pipeline infrastructure	STH, JRL	60	60	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	
	reprocess science data from 05A, 05B as necessary						05A reprocessing tests underway
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	
	manage WFCAM raw data archive. Manage and monitor WFCAM-ESO raw data transfers						WFCAM raw data archive updated as new data came in. 05B transfers to ESO complete.
4.2a	Ingest and verify WFCAM data	MR, MJI	10	25	30	45	
	ingest and verify 05B WFCAM data						all 05B data ingested, verified and fixed where necessary
4.2b	Ingest and verify VISTA data		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	completed
5.2	buy hardware and install	PSB, JMI, MJI	50	100	100	100	completed
5.3	integrating and testing	PSB, JMI	50	100	100	100	completed
5.4	Manage day-to-day maintenance and upgrades	PSB, JMI	17	25	34	52	
	continue maintenance and upgrade programme. Investigate new external bulk storage devices						investigating and trialling new bulk data storage systems. All processing machines update to Debian Sarge 2.6 kernel
5.5	Hardware additions for further processing system		0	0	0	5	
	monitor need for extra hardware for further processing	MJI					no additional CPUs needed yet
6	**Run standard pipeline**						
6.1a	Update WFCAM master calibration frames	MJI, JRL	0	9	18	36	
	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	on hold
6.2a	Monitor detector performance WFCAM	JRL, MR	0	9	18	36	
	monitor with 05A and 05B data						monitored as part of QA checks
6.2b	Monitor detector performance VISTA		0	0	0	0	on hold
6.3a	oversee standard processing WFCAM	MR	0	9	18	36	
	process 05B data						05B data processed
6.3b	Oversee standard processing VISTA		0	0	0	0	on hold
6.4a	Astrometric calibration WFCAM	MJI	0	9	18	36	
	(re)calibrate 05A and 05B data						completed
6.4b	Astrometric calibration VISTA		0	0	0	0	on hold
6.5a	Photometric Calibration WFCAM	STH	0	9	18	36	
	calibrate using 2mass and continue developing secondary standards system, Ces etc						recalibration underway using restricted 2MASS colour range
6.5b	Photometric Calibration VISTA		0	0	0	0	on hold
6.6a	Verify Science products and monitor DQC measures WFCAM	EGS, MJI	0	9	18	36	
	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. EGS produced stacks of the DXS data and catalogues for the EDR
6.6b	Verify Science products and monitor DQC measures VISTA		0	0	0	0	on hold
6.7	Monitor data product transfer to WFAU	MR, MJI	0	9	18	36	
	continue data transfer to WFAU and monitor						extensive discussions and investigations of network transfers, bottlenecks and
6.8a	Reprocess WFCAM data	MR	0	9	18	36	
	reprocess if major bug fixes						fixed problem caused by complete lack of detector#3 for 3 nights. Reprocessing 05A started.
6.8b	Reprocess VISTA data		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	completed
7.1b	Interface test pipelines to VISTA summit DR	JRL	0	0	0	10	held discussion with ESO DMD about testing procedure for VDFS pipeline modules within new ESO software infrastructure (Condor)

7.2a	implement WFCAM pipeline at summit	JRL	75	80	90	100	completed
7.2b	Implement VISTA pipeline at summit	JRL	0	0	0	0	on hold
7.3a	documentation for ORAC-DR interface	JRL	60	60	60	100	completed
	update and deliver documentation as development proceeds						
7.3b	documentation for interface VISTA	JRL	0	0	0	0	on hold
7.4a	upgrade and maintain summit pipeline WFCAM	JRL	17	25	40	55	
	update and maintain as required						fixed minor problems as they arose
7.4b	upgrade and maintain summit pipeline VISTA	JRL	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	
	update and maintain as required. Assess persistance characteristics and develop trial version						presistance report released: http://www.ast.cam.ac.uk/~wfcam/docs/reports/persistence/. an improved sky estimation algorithm has been developed and tested which uses ALL available suitable frames to determine a more "local" sky frame to improve object rejection and rms noise contributions
8.1b	development of VISTA specific packages	JRL	0	0	30	45	
	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						DRL v0.1 was delivered to ESO; the corresponding DRLD was signed off; development and testing of updaed DRL versions continues. Liasing with ESO on using VDFS modukes to test the new ESO pipeline environment
8.2a	liaison with WFCAM development team	JRL	8	25	34	52	
	continue telecons and discussions.						telecons and email discussions continue
8.2b	liaison with Project Scientist & VISTA development team	PSB	8	25	34	52	
	assess any new detector engineering test data						ongoing
8.3a	partake in planning WFCAM commissioning observations	STH	80	100	100	100	WFCAM commissioning completed
8.3b	partake in planning VISTA commissioning observations	STH	0	0	0	10	
	liaise and discuss with camera PS and VISTA PS, find out about current						fedback comments on VISTA technical specification document
8.4a	Participate directly in commissioning WFCAM	STH	50	100	100	100	completed
8.4b	Participate directly in commissioning VISTA	STH	0	0	0	0	on hold
8.5a	Tuning pipeline during commissioning and after WFCAM	MJI, STH, EGS	20	40	40	70	
	keep on tuning as newer data comes in. further assessment of the quality and stability of master calibration data. assess quality of science output						various minor improvements implemented. Science tests made on 05B data
8.5b	Tuning pipeline during commissioning and after VISTA	MJI, JRL, EGS	0	0	0	0	on hold
8.6a	documentation for 2D processing software WFCAM	JRL, MJI	50	50	50	70	
	update docs as necessary. Write data processing technical description paper						paper in preparation. Produced diagram to explain cross-talk pattern and updated the SV report.
8.6b	documentation for additional 2D processing software VISTA	JRL	0	0	30	40	
	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	
	assess CASU processed WFCAM SV data in conjunction with CSV and Survey Heads						various reported problems analysed and, if real, assessed. Examples of quality of science data to be expected produced and included in SV report and on survey progress web pages.
9	**Development and testing of standard catalogue products**						
9.1	add in new measures requested	MJI	60	60	100	100	completed
	monitor and tune if needed						
9.2a	refine astrometric calibration model	MJI	85	85	85	90	

	refine astrometric model						no refinement yet needed since meets requirements and goals
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	completed
9.4	assess catalogue parameter reliability	MJI	70	70	80	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	completed
9.6	Completeness	MJI, EGS	0	10	40	40	
	design and report on completeness model, check completeness [9.6] and error estimates and parameter reliability [9.4]						no progress
9.7	documentation of catalogue software and products	MJI	55	55	60	70	
	update catalogue products documentation						technical description paper drafted
10	**Setup trial and run further processing pipeline**						
10.1	Manage and run further processing stages		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	
	run prototype code for PSF levels 1,2 on 05A data						Latest PSF report released: 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	
	prototype methods for Sersic profile fitting						no progress
10.4	Develop LSBG/nebulosity detection/parameterisation	MJI	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	paused
10.6	Develop and optimize Bayesian image classification	MJI	0	10	30	40	
	trial Bayesian classification schemes						testing Bayesian methods on real data
10.7	Modeling and simulations of further processing steps		0	0	0	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	completed
11.2	Choose secondary standards (WFCAM + VISTA)	STH	80	80	80	80	
	add in last few proposed standards and update doc						no progress (2MASS calibrators working well)
11.3a	take part in commissioning observations WFCAM	STH	10	100	100	100	phase II on-sky characterisation - completed
11.3b	take part in commissioning observations VISTA	STH	0	0	0	0	on hold
11.4a	Reduce data, compute zero points and colour equations WFCAM	STH	15	25	60	80	
	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.
11.4b	Reduce data, compute zero points and colour equations VISTA	STH	0	0	0	0	on hold
11.5	Update, maintain and extend secondary standards system	STH	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	
	stack 2MASS residuals and assess						no progress
11.7	assess extinction monitoring methods and develop measures	STH	50	50	60	70	

	use 2MASS comparison to get first order estimate and assess expected accuracy in light of results from UKIRT FS						2MASS calibration on a per-catalogue basis has removed the need for individual extnction measures; now refining photometric quality measures for each catalogue product and for overall night measures.
12	**Further development of DQC measures at summit and Cambr**						
12.1	develop extra systematic noise measures	MJI	50	75	80	80	
	finished for WFCAM; awaiting VISTA test files						still waiting
12.2	Refine current measures for WFCAM/VISTA data	JRL, MJI	20	25	40	65	
	continue monitoring the DQC assessment by visually checking random sub-sample						DQC monitoring completed for 05A+B
12.3	implement 2mass for throughput measurement	JRL	75	100	100	100	implemented local access version at summit - completed
12.4	master calibration frames for detector monitoring	JRL, MR	35	40	60	80	
	continue monitoring using 05A and 05B WFCAM data						completed for 05A+B, drafted paper on properties of sky
13	**Co-located list driven photometry**						
	V2 Progress		83	83	95	99	
	e1 progress		83	83	95	99	
13.1	test methods for master catalogue generation	MJI	100	100	100	100	completed
13.2	develop basic WCS-based list driven photometer	MJI	90	90	95	97	
	test 80 parameter set (subsumes 13.3)						development completed - now needs porting to C version for pipeline
13.3	externally driven WCS photometry and define parameter set	MJI	75	75	95	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	completed
14.2	NN algorithm with simple rejection	MJI	100	100	100	100	completed
14.3	More sophisticated rejection dealing with pixilation	MJI	100	100	100	100	completed
14.4	Stacking with optimum weighting and defect rejection	MJI	25	25	25	35	
	refine using WFCAM deep survey data and optical data. Trial different interpolation						investigated and evaluated literature for alternative methods
14.5	Advanced stacking/image restoration for variable PSF	MJI	0	0	0	10	
	investigate alternatives as part of UK design review						investigated and evaluated literature for alternative methods
15	**Continuum subtraction and basic difference imaging**						
15.1	Simple WCS-based subtraction techniques	MJI	100	100	100	100	completed
15.2	investigate and apply different interpolation methods	MJI	100	100	100	100	completed
15.3	develop adaptive kernel matching option	MJI	80	80	80	85	
	continue debugging and enhancements to adaptive kernel package						maintained and updated as needed
15.4	time series photometry	STH	20	20	50	70	
	test with WFCAM photometry						initial results promising (using DXS and transit fields)
16	**Interpolation techniques and PSF modeling**						
16.1	investigate alternative interpolation/PSF schemes	DWE	100	100	100	100	completed
16.2	implications for different stacking methods	DWE	20	25	30	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	
	finish testing of astrometric refinement code						a better PSF determination scheme has been developed but the PSF refinement code is still being debugged to give optimum results
16.4	oversampled PSF generation per detector	DWE	100	100	100	100	completed
16.5	develop oversampled spatially varying PSF model	DWE	20	25	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