

Appendix 3. System status at construction readiness review

Code	Item	R&D	Specifications / Plans	Conceptual design	Preliminary design	Final design	Completion	Remarks
30000	Project Engineering							
32000	System engineering IT tools						x	
32000	Wind tunnel testing	Completed						
33000	AIV		x					
34000	Commissioning		x					
35000	R&D, major breadboards and experiments							
35100	Adaptive optics concepts & technologies							
35100	LGS Wavefront sensing development & experiments	Ongoing						
35100	LGSF Technology development	Ongoing						
35100	Wavefront sensor 512x512 CCD development	Ongoing						
35100	Wavefront sensor IR detector development	Completed						
35100	Wavefront sensor IR detector development	Ongoing						
35100	WFS detector controller development	Completed						
35100	Real Time Computer development & algorithms	Completed						
35100	Micro-Deformable Mirror (MDM) prototype (10kact)	Ongoing						
35100	MDM drive electronics development (10kact)	Ongoing						

Code	Item	R&D	Specifications / Plans	Conceptual design	Preliminary design	Final design	Completion	Remarks
35200	Physical optics R&D	Completed						
35300	Non-adaptive wavefront sensing							
35300	Phasing cameras - experiments (on GTC)	Completed						
35300	Phasing cameras - preliminary designs	Completed	x	x	x			
35400	Optical materials & processes							
35400	Silicon Carbide	Completed						
35400	Instrumentation - filters / glasses	Completed						
35500	Advanced structural materials	Completed						
35600	Advanced enclosure concepts & technologies	Completed						
35700	Telescope drives							
35700	Breadboard friction drive	Completed						
35700	Magnetic levitation	Completed						
40000	Site infrastructure							
41000	Integration infrastructures							
41100	Enclosure integration infrastructures				x		Ongoing	
41200	Telescope structure & kinematics integration infrastructures				x		Ongoing	
41300	Optomechanical subsystems integration infrastructures							
41310	M1 & M2 units integration tools & equipments		x	x				
41320	Corrector unit integration tools & equipment		x	x				
41330	Focal Stations integration tools & equipment		x	x				
41340	Telescope pre-alignment unit integration tools & equipment		x	x				
41400	Other temporary integration facilities		x	x				
42000	Operation infrastructures							
42100	Maintenance infrastructures[1]		x	x				
42200	Science operation infrastructures		x	x				
42300	Other infrastructures[2]		x	x				
42400	Power plant / supply		x	x	x	x	First stage	
42500	Services		x					
42600	Technical buildings		x					
43000	Site preparation		x	x	x	x	Ongoing	
43000	Site preparation							
49000	Site infrastructure maintenance facility		x					
50000	Enclosure		x	x	x		Ongoing	

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51000	Enclosure foundations		x	x	x		Ongoing	
52000	Kinematics		x	x	x		Ongoing	
53000	Enclosure structures		x	x	x		Ongoing	
59000	Enclosure Maintenance Units		x	x	x		Ongoing	
70000	Telescope structure & kinematics							
71000	Azimuth structures		x	x	x		Ongoing	
71100	Azimuth tracks		x	x	x		Ongoing	
71200	Azimuth drives		x	x	x		Ongoing	
71300	Azimuth structural mechanics		x	x	x		Ongoing	
71400	Central azimuth bearing and encoder assembly		x	x	x		Ongoing	
71500	Azimuth Cable wrap		x	x	x		Ongoing	
71600	Azimuth cooling system		x	x	x		Ongoing	
71700	Auxiliary equipments3		x	x	x		Ongoing	
72000	Altitude structures		x	x	x		Ongoing	
72100	Altitude cradle		x	x	x		Ongoing	
72200	Altitude drives		x	x	x		Ongoing	
72300	Altitude structural mechanics		x	x	x		Ongoing	
72400	Altitude bearings and encoders assemblies		x	x	x		Ongoing	
72400	Kevlar ropes		x	x	x		Ongoing	
72400	Ropes tension devices		x	x	x		Ongoing	
72500	Altitude Cable wraps		x	x	x		Ongoing	
72600	Altitude cooling system (corrector, instrumentation).		x	x	x		Ongoing	
72700	Auxiliary equipments4		x	x	x		Ongoing	
73000	Wind screens		x	x	x		Ongoing	
74000	Mirror covers		x	x	x		Ongoing	
75000	Telescope foundations		x	x	x		Ongoing	
76000	Telescope diagnostic systems.		x	x	x		Ongoing	
79000	Telescope structure & kinematics maintenance units		x	x	x		Ongoing	
80000	Optomechanical subsystems							
80000	Segments actuators		x	x	x			
80000	Local metrology - (position sensors)		x	x	x			
81000	Primary mirror unit							
81110	Segment assembly		x	x	x	x		Incl. prototypes
81120	Whiffle trees		x	x	x	x		Incl. prototypes
81130	Active supports		x	x	x	x		Incl. prototypes

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81140	Local metrology assembly		x	x	x	x		Incl. prototypes
81150	Subcells		x	x				
82000	Secondary mirror unit							
82110	Segment assembly		x	x	x	x		Incl. prototypes (same as M1)
82120	Whiffle trees		x	x	x	x		Incl. prototypes (same as M1)
82130	Active supports		x	x	x	x		Incl. prototypes (same as M1)
82140	Local metrology assembly		x	x	x	x		Incl. prototypes (same as M1)
82150	Subcells		x	x				
83000	Corrector unit							
83100	Corrector structure & kinematics		x	x				
83200	Instruments racks		x	x				
83300	M3 subunit							
83310	M3 mirror assembly		x	x				
83320	M3 cell		x	x				
83400	M4 subunit							
83410	M4 mirror assembly		x	x				
83420	M4 cell		x	x				
83500	M5 subunit							
83510	M5 provisional assembly		x	x	x			
83520	M5 adaptive assembly		x	x	x			
83600	M6 subunit							
83510	M6 provisional assembly		x	x	x			
83520	M6 adaptive assembly		x	x	x			Incl. prototypes
84000	Focal stations							
84100	Electromechanical subunits		x	x				
84200	Active optics metrology		x	x				
84300	Phasing metrology		x	x	x			
84400	Guiding and field stabilization metrologies		x	x				
84500	Adaptive optics metrology & real-time computers		x	x				
85000	Telescope pre-alignment unit		x	x				
89100	M1 & M2 offline maintenance facility							
89110	Segments clean room		x	x				
89120	Segments washing & coating tanks		x	x				
89130	Segments carts and transporters		x	x				
89140	Segments support stands (emergency support)		x	x				

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89150	Segments racks		x	x				
89160	Segments storage room		x	x				
89200	M1 & M2 in-situ maintenance devices							
89210	M1 in-situ cleaning robot		x	x				
89220	M1 segment assembly in-situ handling robot		x	x				
89230	M1 cover in-situ cart holder		x	x				
89240	M2 in-situ cleaning device		x	x				
89250	M2 segment assembly in-situ handling tool		x	x				
89300	Corrector maintenance facility							
89310	Corrector maintenance hall		x	x				
89320	Corrector transporter		x	x				
89330	M3 & M4 subunits extractor		x	x				
89340	M3 & M4 subunits transporter		x	x				
89350	M5 subunit extractor		x	x				
89360	M5 subunit transporter		x	x				
89370	M6 subunit extractor		x	x				
89380	M6 subunit transporter		x	x				
89400	M3 & M4 assemblies maintenance facility							
89410	M3 & M4 assemblies maintenance hall		x	x				
89420	M3 & M4 clean room		x	x				
89430	M3 & M4 assemblies lifting device		x	x				
89440	8-m class washing & coating tanks		x	x				
89450	M3 mirror assembly washing & coating cart		x	x				
89460	M4 mirror assembly washing & coating cart		x	x				
89470	M3 mirror assembly support stand (emergency support)		x	x				
89480	M4 mirror assembly support stand (emergency support)		x	x				
89500	M5 & M6 assemblies maintenance facility							
89510	M5 & M6 assemblies maintenance hall		x	x				
89520	M5 & M6 clean room		x	x				
89530	M5 mirror assembly lifting device		x	x				
89540	M6 mirror assembly lifting device		x	x				
89550	M5 assembly washing & coating cart		x	x				
89560	M6 assembly washing & coating cart		x	x				

Code	Item	R&D	Specifications / Plans	Conceptual design	Preliminary design	Final design	Completion	Remarks
89570	4-m class washing & coating tanks		x	x				
89580	M5 mirror assembly support stand (emergency support)		x	x				
89590	M6 mirror assembly support stand (emergency support)		x	x				
89600	Corrector in-situ cleaning devices		x	x				
89700	Focal Stations maintenance facility		x	x				
90000	Instrumentation							
91000	Technical instrumentation		x	x	x			
92000	Science instrumentation		x	x	x			At least 2 instruments
93000	Post-focal AO units		Draft	x				
99000	Instruments maintenance facility		x	x				
100000	Laser Guide Stars Subsystem							
101000	Laser units		Draft					
102000	Beam Propagation units		x	x				
103000	Control & Metrology units		x	x				
109000	LGS maintenance facility		x	x				
110000	Central Control Systems							
111000	Central Control environment		x	x				
115000	IT Systems		x	x				
119000	Central Control maintenance facility		x	x				
120000	Site characterization							
121000	Weather stations		x	x				
122000	Turbulence monitoring units		x	x				
123000	Sky Monitoring Units		x	x				
129000	Site characterization maintenance facility		x	x				