

ID	Task Name	Duration	2007				2008				2009				2010			
			Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	
1	Optics and beam dynamics	760 days																
2	Lattice design	600 days																
3	Set lattice specifications	0 days																
4	Develop damping rings lattice designs	8 mons																
5	Select and "freeze" baseline lattice design	0 days																
6	Develop baseline design of injection/extraction lines	3 mons																
7	"Freeze" baseline design of injection/extraction lines	0 days																
8	Develop baseline design of abort line	3 mons																
9	"Freeze" baseline design of abort line	0 days																
10	Explore optimisations and operational flexibility	15 mons																
11	Make necessary changes to lattice design	3 mons																
12	Make necessary changes to injection/extraction lines	1 mon																
13	Make necessary changes to abort line	1 mon																
14	Lattice designs finalised and documented	0 days																
15	Impedance and impedance-driven instabilities	760 days																
16	Construct impedance model from scaled component designs	4 mons																
17	Model instabilities using preliminary impedance model	3 mons																
18	Make instability estimates based on preliminary impedance model	0 days																
19	Refine and improve impedance models and instability calculations	12 mons																
20	Construct impedance model using real technical designs	4 mons																
21	Understand impact of single-bunch and coupled-bunch instabilities, and inji	3 mons																
22	Estimates of coupled-bunch instability growth rates	0 days																
23	Specify improvements to lattice and vacuum designs	0 days																
24	Refine and improve impedance models and instability calculations	6 mons																
25	Finalise impedance model	3 mons																
26	Characterise instabilities using detailed impedance model	3 mons																
27	Predict instability characteristics and thresholds	0 days																
28	Electron cloud	648 days																
29	Evaluate electron cloud mitigation techniques	15 mons																
30	Specify baseline ecloud mitigation techniques	0 days																
31	Start construction of test dipole chamber	15 mons																
32	Finalise construction of test dipole chamber	2 mons																
33	Test ecloud mitigation techniques in dipole chamber	6 mons																
34	Start construction of test wiggler chamber	15 mons																

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35	Finalise construction of test wiggler chamber	2 mons															
36	Test ecloud mitigation techniques in wiggler chamber	6 mons															
37	Model ecloud build-up with baseline mitigation techniques	1 mon															
38	Benchmark electron cloud instability codes	9 mons															
39	Model electron cloud instabilities	6 mons															
40	Validate design for ecloud mitigation, and predict ecloud instability safety m	0 days															
41	Ion effects	360 days															
42	Use existing models to estimate ion effects under various fill/vacuum condi	7 mons															
43	Make initial specification of vacuum conditions to mitigate fast ion instability	0 days															
44	Collect experimental data on fast ion instability	12 mons															
45	Benchmark fast ion instability modelling codes	3 mons															
46	Run simulations of fast ion instability for various vacuum and operational c	3 mons															
47	Specify vacuum conditions and fast feedback systems performance to avoi	0 days															
48	Other collective effects	600 days															
49	Placeholder for space-charge studies	30 mons															
50	Initial estimates of intrabeam scattering	6 mons															
51	Initial estimates of intrabeam scattering	0 days															
52	initial estimates of Touschek lifetime	6 mons															
53	Initial estimates of Touschek lifetime	0 days															
54	Acceptance	700 days															
55	Make preliminary estimates of dynamic aperture	7 mons															
56	Preliminary estimates of dynamic aperture	0 days															
57	Specify magnet field quality	0 days															
58	Specify physical apertures	0 days															
59	Explore dynamic aperture limitations and possible improvement techniques	12 mons															
60	Characterise acceptance using technical designs of magnets	3 mons															
61	Understand acceptance limitations using technical designs of magnets	0 days															
62	Explore dynamic aperture limitations and possible improvement techniques	9 mons															
63	Complete studies of acceptance	3 mons															
64	Confirm acceptance margin on injected beam	0 days															
65	Orbit, optics and coupling correction	660 days															
66	Experimental studies of orbit and coupling correction	24 mons															
67	Demonstrate 2 pm vertical emittance	0 days															
68	Make initial estimates of alignment sensitivities in baseline lattice	7 mons															

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69	Initial estimates of alignment sensitivities	0 days															
70	Specify and evaluate possible orbit and coupling correction schemes	9 mons															
71	Evaluate impact of ground vibration, temperature variations and long-term	6 mons															
72	Initial estimates of impact of ground vibration, temperature variations and k	0 days															
73	Optimise orbit and coupling correction scheme	6 mons															
74	Finalise orbit and coupling correction scheme	3 mons															
75	Correction systems documented and costed	0 days															
76	Preservation of polarisation	560 days															
77	Preliminary evaluation of depolarisation rates	16 mons															
78	Evaluate depolarisation rates including realistic alignment and tuning mode	12 mons															
79	Report on preservation of polarisation	0 days															
80	Technical subsystems	720 days															
81	Vacuum system	640 days															
82	Preliminary vacuum system specifications	1 mon															
83	Set baseline specifications for vacuum system (subject to ecloud studies)	0 days															
84	Prepare initial technical designs of vacuum system components	6 mons															
85	Review vacuum system specifications	1 mon															
86	Develop initial technical designs of vacuum system components	7 mons															
87	Finalise technical designs of vacuum system components	3 mons															
88	Technical designs of vacuum system components	0 days															
89	Optimise vacuum system for cost and technical performance	7 mons															
90	Make essential modifications to technical designs of vacuum system comp	6 mons															
91	Vacuum system technical design finalised, documented and costed	0 days															
92	Magnets and supports	720 days															
93	Specify magnets	1 mon															
94	Develop technical designs for main magnets	12 mons															
95	Technical designs for main magnets	0 days															
96	Optimise magnet designs for cost and performance	10 mons															
97	Finalise designs of main magnets	6 mons															
98	Magnet designs documented and costed	0 days															
99	Develop technical designs for magnet supports	6 mons															
100	Model magnet supports response to vibration and long-term stability	4 mons															
101	Characterisation of magnet supports response to vibration and long-term si	0 days															
102	Optimisation of design of magnet supports	4 mons															

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103	Finalise design of magnet supports	4 mons															
104	Magnet supports documented and costed	0 days															
105	Wiggler	120 days															
106	Develop technical design for wigglers	6 mons															
107	Wiggler design documented and costed	0 days															
108	Power systems	240 days															
109	Specify magnet power supplies, power distribution and cooling system	3 mons															
110	Develop designs for power distribution and cooling systems	9 mons															
111	Power systems documented and costed	0 days															
112	650 MHz RF system	540 days															
113	Initial specifications for RF system	3 mons															
114	Preliminary technical design of RF system	4 mons															
115	Develop technical designs for RF cavities	9 mons															
116	Develop technical specifications/designs for modulators, klystrons, wavegu	9 mons															
117	Technical design of RF components	0 days															
118	Finalise RF system technical designs	10 mons															
119	Develop technical design for low-level RF	6 mons															
120	RF system documentation and costing	0 days															
121	Injection and extraction systems	600 days															
122	Install single-bunch extraction system in ATF	9 mons															
123	Demonstrate single-bunch extraction from ATF	0 days															
124	Develop fast high-power pulser meeting damping ring specifications	24 mons															
125	Develop technical design for kicker striplines	12 mons															
126	Technical design for kicker striplines	0 days															
127	Fabricate striplines for beam tests	12 mons															
128	Install and test fast injection/extraction kicker system	6 mons															
129	Demonstrate injection/extraction kickers with damping ring specifications	0 days															
130	Fast feedback systems	180 days															
131	Develop technical design for longitudinal fast feedback system	9 mons															
132	Longitudinal fast feedback systems documented and costed	0 days															
133	Develop technical design for transverse fast feedback system	9 mons															
134	Transverse fast feedback systems documented and costed	0 days															
135	Abort systems hardware	340 days															
136	Develop technical design for abort dump	6 mons															

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137	Technical design for abort dump	0 days				◆											
138	Develop technical designs for abort kickers	9 mons															
139	Abort systems documented and costed	0 days															
140	Instrumentation and diagnostics	720 days															
141	Instrumentation and diagnostics placeholder	36 mons															
142	Systems integration and availability studies	720 days															
143	Systems integration tasks placeholder	36 mons															
144	Systems availability tasks placeholder	36 mons															
145	Global systems: integration into the organisational structure uncertain. Mostly	720 days															
146	Conventional facilities	480 days															
147	Design excavations (tunnels and caverns)	12 mons															
148	Design air conditioning/temperature stabilisation systems	9 mons															
149	Finalise conventional facilities designs	3 mons															
150	Conventional facilities documented and costed	0 days															
151	Control systems	120 days															
152	Specify control systems	6 mons															
153	Control systems documented and costed	0 days															
154	Cryogenics systems	120 days															
155	Specify cryogenics systems	6 mons															
156	Cryogenics systems documented and costed	0 days															
157	Survey and alignment	720 days															
158	Survey and alignment placeholder	36 mons															
159	Installation and commissioning plan	720 days															
160	Installation plan placeholder	36 mons															
161	Commissioning plan placeholder	36 mons															
162	Test facilities: placeholders for tasks specific to test facility development	720 days															
163	ATF	720 days															
164	Experimental studies placeholder	36 mons															
165	CesrTA	720 days															
166	Experimental studies placeholder	36 mons															
167	KEKB	720 days															
168	Experimental studies placeholder	36 mons															