ID	Task Name	Duration
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 inj	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

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
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 co	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															

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
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 l	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 st	0 days															
102	Optimisation of design of magnet supports	4 mons															

ID	Task Name	Duration
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

ID	Task Name	Duration	2007 Qtr 1	Qtr 2	Qtr 3	Qtr 4	2008 Qtr 1	Qtr 2	Qtr 3	Qtr 4	2009 Qtr 1	Qtr 2	Qtr 3	Qtr 4	2010 Qtr 1	Qtr 2	Qtr 3
137	Technical design for abort dumpt	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	Commisioning 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															