

Checklist for Drainage Plan Submissions

(This checklist is **not** required to be submitted to the BD)

- : information to be shown on plan
○ : information to be accompanied with the plan submission

Part A – Plans and Forms

Typical Items		Requirements	Reference
1.	Statutory Forms	○ Form BA 5 (application for approval)	B(A)R 18A and 29(1) PNAP ADM-2 PNAP APP-55
		○ Form BA8 & BA8A (application for concurrent approval and consent)	
		○ Form BA16 (application for exemption/ modification)	
		○ Form BD24 (if payment is required)	
2.	Plans	○ Plans (2 signed and coloured sets for BA) with completed Annex C1 ○ Additional sets of plans for referral	PNAP ADM-2 Confirmation by AP for drainage plan submission in Annex C1
3.	Fee for Drainage (A&A) plan processing	○ Crossed cheque for payment	PNAP APP-55

Part B – Supporting Documents

		Reference
1.	○ Documents/ catalogue in support of applied exemption/ modification in Form BA16	
2.	○ Structural details for manholes, etc, in separate structural submission (except for A&A works)	
3.	○ Soakaway pit: percolation test report and supporting calculation for EPD's comment	B(SSFPDWL) R 90
4.	○ Septic tank and sewage treatment plant: calculation and pilot test report for EPD's comment	EPD ProPECC PN5/93
5.	○ Catchment area calculation, Drainage Impact Assessment (DIA) & Sewage Impact Assessment (SIA) for DSD's comment	
6.	○ Written consent from third party for disposal to private drains outside lot boundary	

PART C – Information on Plans

		Reference
1.	Method of Disposal and Connection to Public Sewer	
a.	<input type="checkbox"/> Public/ private storm drains and sewers (including nullah, culvert and streamcourse) and sizes and disposition of connecting drains obtained from DSD	
b.	<input type="checkbox"/> Foul/surface water terminal manhole located as close to site boundary as possible, provided with disconnecting trap and adequately ventilated	B(SSFPDWL) Rs 52(2) and 57
c.	<input type="checkbox"/> Trade effluent discharge, sewage treatment plants, septic tanks, soakaway pits, grease traps and petrol interceptors	EPD ProPECC PN5/93 and B(SSFPDWL) R 90
2.	Layout of Underground Drain	
a.	<input type="checkbox"/> Diameter, minimum fall and flow direction of drains	B(SSFPDWL) R 48, Table 29
b.	<input type="checkbox"/> No acute angle between the directions of flow of inlets and outlets in manholes	B(SSFPDWL) R 49(2)
c.	<input type="checkbox"/> Drop pipes provided in manholes for in drains with invert level more than 600mm higher than the invert level of out drains	
d.	<input type="checkbox"/> Hatch boxes provided for foul water drains/manholes which lie in water gathering ground	B(SSFPDWL) R 47A(1)(b)
e.	<input type="checkbox"/> Ducting or leakage collection system provided for waterborne buried services close to crest areas, slopes and retaining walls	PNAP APP-76
f.	<input type="checkbox"/> No manhole / BIGT in refuse rooms	
g.	<input type="checkbox"/> Covers for manholes, BIGT, grease traps and petrol interceptors etc. made of cast iron, air-tight and where in or under a building double-sealed	B(SSFPDWL) R 56(7)
h.	<input type="checkbox"/> No surface water discharges into foul water drains or vice versa	B(SSFPDWL) Rs 40(1) and 41(1)
i.	<input type="checkbox"/> Manholes or cleaning eyes provided at intervals not more than 60m	B(SSFPDWL) R 55(2)
3.	Layout of External drainage system	
a.	<input type="checkbox"/> Directions of fall for surface water at balconies, canopies, utility platforms, roofs, podium roofs and surface channels	
b.	<input type="checkbox"/> Min. 65mm diameter of rainwater pipes provided except where B(SSFPDWL)R33 applies	B(SSFPDWL) R 32(3)

		Reference
c.	<input type="checkbox"/> For cantilevered structures exposed to weather, surface water drained away from the structure with a fall of not less than 1:75 and for inaccessible structures the distance between drain outlets not more than 5 cm	PNAP APP-68
d.	<input type="checkbox"/> Ground surface paving laid to a fall of not less than 1:80 to a gully trap or surface channels connected to surface water drains	s 33(3) of the B(C)R PNAP APP-125
e.	<input type="checkbox"/> Level difference between internal floor and adjoining external ground/roof not less than 150 mm; or <input type="checkbox"/> Additional drainage channels, each with at least 2 drainage outlets and the external ground/roof is laid to fall at a gradient of not less than 1 in 80 away from the adjoining internal floor	s 33(2) and s 34(2) of the B(C)R PNAP APP-125
f.	<input type="checkbox"/> Ventilating pipes (i) extended to 1000mm above the roof, adjoining parapets or 2.5m above adjoining street, (ii) no escape of foul air into any building and (iii) open ends provided with suitable grating having apertures of an aggregate area not less than the sectional area of the pipe	B(SSFPDWL) R 31(1), 31(2) and 31(5); B(P)R 4(c)
g.	<input type="checkbox"/> Provision of drain outlets in verandahs next to kitchens and utility rooms	EPD ProPECC PN5/93
h.	<input type="checkbox"/> Condensate water from air-conditioning units, planters and landscaped areas, annual drains from swimming pools, sub-soil water and groundwater collection drains for basement connected to the surface water system	
i.	<input type="checkbox"/> Surface water from open transport interchange or cargo handling areas connected to surface water drains via petrol interceptors that would allow bypass during peaks	
j.	<input type="checkbox"/> Surface water channels of adequate sizes, finished off smooth with a min. fall of 1:100 and provided with suitable grilles	B(SSFPDWL) R 61
k.	<input type="checkbox"/> No drain or pipe projects over a street/ lane more than 300 mm or at a height of less than 2.5 m above the level of the ground	B(P)R 7(2)
l.	<input type="checkbox"/> Interface with permanent drainage system on site formation plans	
4.	Layout of Internal drainage system	
a.	<input type="checkbox"/> No water-borne pipe embedded in structural elements	PNAP APP-105
b.	<input type="checkbox"/> Anti-siphonage pipes connected with the soil/waste pipe at a point not more than 300mm from the trap outlet	B(SSFPDWL) R 30(2)(b)(ii)

		Reference
c.	<input type="checkbox"/> Drainage systems for high rise buildings separated into vertical zones	PNAP APP-93
d.	<input type="checkbox"/> Radius of the bends at the bottom of soil and waste pipes not less than 200 mm or 4 times the radius of the pipe	
e.	<input type="checkbox"/> Grease traps for waste water discharge from kitchen provided for restaurants	EPD ProPECC PN5/93
f.	<input type="checkbox"/> Drains for covered areas with vehicular access such as carparks, loading/unloading areas transport interchanges, etc. connected to the foul water system via petrol interceptors	
g.	<input type="checkbox"/> Drain outlets with grating provided in refuse storage chamber and connected via a pipe with minimum 100mm diameter to a back inlet trapped gully with airtight cover and ventilating pipe outside the storage chamber	B(RS&MRC& RC)R 11
h.	<input type="checkbox"/> Floor drain of utility platform (i) connected to the rain water system and (ii) where a water point is installed for washing machine, a waste discharge pipe provided in addition	
5. Access for Maintenance/ Repair		
a.	<input type="checkbox"/> Drains, manholes, sump pits and petrol interceptors located in common parts of the building in both drainage plan and GBP	PNAP APP-93
b.	<input type="checkbox"/> Pipe ducts in domestic building provided with (i) access doors of minimum 600mmW x 2000 mmH and (ii) an unobstructed working space of minimum 700 mm x700 mm in front of the pipes preferably outside the duct	
c.	<input type="checkbox"/> Pipe wells in domestic building with minimum size of 1200mm x 1500mm with access points not more than 21 storeys apart and vent openings at both the top and bottom of the well	
d.	<input type="checkbox"/> For sunken slabs to house drains in troughs, access points for inspection and maintenance and trough to be backfilled by conveniently removable materials such as sand, light weight concrete or cement sand mortar	
e.	<input type="checkbox"/> External drainage pipes if enclosed by architectural features, a minimum 120mm unobstructed vertical space in front of all pipes	
f.	<input type="checkbox"/> For domestic buildings, no pipework for a unit shall protrude into the unit under separate occupancy	
g.	<input type="checkbox"/> Sanitary fitments on the lowest floor above ground are independently connected to manhole (except for 3-storey single family house)	

		Reference
h.	<input type="checkbox"/> Water supply pipes or drains not passing through any TBE room, transformer room, switch room and emergency generator room	PNAP APP-84 for TBE room
6.	Others	
a.	<input type="checkbox"/> Material schedule for drains and pipes, including ventilating pipes	PNAP APP-133
b.	<input type="checkbox"/> Manhole schedule with cover levels, invert levels, depths, types of manhole and types of cover	
c.	<input type="checkbox"/> Typical details for manholes, petrol interceptors, sump pits, trap gullies, grease traps and channels, etc, standby and duty pumps for sewage or surface water sump pump system; and corresponding structural details included in structural submissions	
d.	<input type="checkbox"/> Drains and pipes in fire protected areas enclosed with adequate FRR	Part C of FS Code
e.	<input type="checkbox"/> Slots of gratings or channel covers not more than 13mm and not parallel to the direction of pedestrian flow; and any dimension of square or round holes on channel covers not more than 20mm	B(P)R 72, Schedule 3, Division 9, Clauses 32 and 33
f.	<input type="checkbox"/> Bearing capacities of imposed loads of covers or grating for drainage features in areas with (i) vehicular traffic such as carparks, EVA, loading/unloading areas and (ii) pedestrian traffic including wheeled chair or trolley users commensurate with those required for the surrounding areas	Section 3 of Code of Practice for Dead and Imposed Loads 2011
g.	<input type="checkbox"/> Extent of A&A areas and reference made to relevant drainage A&A plans previously approved	
h.	<input type="checkbox"/> Routing of pipes and drains with suitable legend	

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